Descriptive Catalogue of the Fishes of Australia.

By William Macleay, F.L.S., &c

Part I.

The following Catalogue is compiled with the view of obviating or lessening the difficulty which the student of Ichthyology in this Country has to encounter from having to refer for the history and identification of the species, to numberless publications in a variety of languages, which are only to be found in very large and well-stocked libraries. Up to a certain period Dr. Gunther's Catalogue of the Fishes of the British Museum met this difficulty, but the vast additions which have been made to the fauna of Australia since the date of that publication has made it almost obsolete as a record of Australian Fishes. This may be inferred from the fact that while the number of Acanthopteryginous Fishes given as Australian in Dr. Gunther's Catalogue does not exceed 210, the number recorded in the Catalogue of which I now lay before you the first part, comes up to 650 species.

The classification I have adopted is entirely that of Dr. Gunther, and I have never departed from his nomenclature, excepting in a very few and easily explained instances.

The descriptions given of the genera and species are also, wherever available, taken from Dr. Gunther, as being more terse and to the point than those of most authors, and in every case I have been as brief as possible, so as to keep the Catalogue within the smallest limits. For the same reason I have not given, except in rare instances, the synonyms of the species, and I have confined the references to one or two of the most useful and best known. No description is given with those species which have been previously described in the Proceedings of this Society.

Under each genus I state its general geographical range; and under the species its Australian habitat. The term Australian includes all seas from the South Coast of New Guinea to the

South of Tasmania, and from the West Coast of New Holland eastward as far as Norfolk Island.

KINGDOM *ANIMALIA*. SUB-KINGDOM *VERTEBRATA*.

CLASS FISHES.

Vertebrate animals, with a double circulation and cold red blood, inhabiting water, and breathing through gills.

SUB-CLASS I. TELEOSTEI.

Fishes having a bony skeleton.

ORDER I. *ACANTHOPTERYGII.*

Teleosteous fishes with one or more of the rays of the dorsal, anal, and ventral fins spiny and not articulated, and with the inferior pharyngeal bones separated.

DIVISION I. ACANTH. PERCIFORMES.

Body compressed, elevated or oblong, not elongate. No prominent anal papilla : no superbranchial organ. Dorsal fin, or fins occupying the greater portion of the back, spinous dorsal generally with stiff spines ; the soft anal similar to the soft dorsal, of moderate extent or rather short. Ventrals thoracic, always present, with one spine at least and four or five rays.

FAMILY I. PERCIDÆ.

Body compressed or oblong ; one or two dorsal fins, the spinous part always well developed. Soft dorsal and anal fins similar, generally a lateral line, lower pectoral rays branched : vertical fins not scaly.

Group *Percina.*

Genus LATES, Cuv.

Seven branchiostegals ; pseudobranchiæ. Teeth villiform, without canines ; teeth on the palatine bones, tongue smooth.

Two dorsal fins. Operculum spiniferous; præoperculum with strong spines at the angle and at the lower limb; præorbital strongly serrated. Scales moderate.

Nile, mouth of large East Indian Rivers, and Australia.

1. LATES CALCARIFER, Bl.

Gunth. Cat. Fishes I., p. 68.—*Lates nobilis*, Cuv. & Val.

D. 7-8. 1/12. A. 3/8-9.

Angle of præoperculum obtuse, the lower limb with four strong spines; coracoid with six to ten denticulations; the third spine of anal fin twice as long as the second. Back and sides brownish, shining: belly white.

A large fish, found on the coasts and at the mouths of rivers in India, China, Java, &c., and probably all over the intertropical coasts of Australia, as Dr. Gunther has seen it from the Fitzroy River, and Count Castelnau mentions it among the Fishes of the Norman River. Proc. Linn. Soc. N.S. Wales, vol. iii., p. 42.

2. LATES COLONORUM, Gunth.

Ann. & Mag. Nat. Hist. 1863. p., 114. *Perch of Colonists.*

D. 8. 1/10. A. 3/8. L. lat. 55. L. transv. 8/21.

Body slightly compressed; the height a little more than one-third of the length without caudal. Head one-third of the length without caudal. Eyes large, yellow, distant from the point of the snout about one diameter, and more than a diameter apart. Teeth minute, villiform, the palatine bands narrow and separate from the vomerine band. Maxillary broad, triangular, reaching to below the middle of the eye; mouth slightly oblique, præoperculum strongly toothed, six or seven of the teeth at and below the angle being large and pointed forwards, operculum with a very long acute spine at its extremity. Infraorbital finely serrated and slightly sinuate, the suture of the sub and inter-operculum elevated into a sharp ridge. Dorsal fins continuous, the fourth spine the longest; third anal spine a little longer than the second; caudal slightly emarginate. Lateral line slightly curved, and occupying 51 scales. Colour silvery, darker on the back.

The continuity of the dorsal fins ought to remove this species from this genus. It is found in all the Eastern rivers of New South Wales, and in some of those of Victoria, and attains a considerable size.

3. LATES SIMILIS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 44.

This species differs from *L. colonorum* in having the snout shorter, and less than the diameter of the eye, the denticulations of the præoperculum are larger, and those of the lower limb are directed backwards. The second dorsal has only nine rays. Found in the Gippsland Lakes.

4. LATES ANTARCTICUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 44.

Sea Perch of the Melbourne Market.

This species, which I have never seen, seems to differ from *L. colonorum* in being of a higher form, in having the præorbital more finely serrated, and the præoperculum more strongly toothed on the posterior edge. The colour is silvery with the back and upper parts of the head of a dark blue; dorsal and caudal fins blackish; ventrals and pectorals of a dark greenish-gray, anal of a light grey.

This Fish is occasionally seen in the Melbourne Market and is esteemed for food.

5. LATES VICTORIÆ, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 45.

This species differs from the last in having the second spine of the operculum composed of a bunch of four spines, of which the two central ones are the largest. The lateral line has two very strong sinuosities, one opposite to the commencement of the first dorsal, the other to its end. The body is very silvery, with the back of a light green, showing on the living specimen seven or eight longitudinal lines of a rather darker tinge, the sides and belly have a rosy hue, the side of the head is somewhat purple, the fins are of a purplish green and the eyes yellow. Attains a length of 16 inches, and like the last is occasionally seen in the Melbourne Fishmarket.

6. LATES CURTUS, Casteln.

Researches on the Fishes of Australia, p. 5.

Differs from *L. colonorum* in being shorter and higher in the body, in having the maxillary bilobed anteriorly, and in having 11 rays in the soft dorsal. The third spine of the dorsal is the longest, there are 53 scales on the lateral line, and the transverse line consists of 10/17. Colour uniform, and length of specimen 14 inches. Found in the Richmond River.

7. LATES DARWINIENSIS, Macleay.

Proc. Linn. Soc., N.S. Wales, Vol. II., p. 345.

Port Darwin.

8. LATES RAMSAYI, *n. sp.*

D. 9. 1/10. A. 3/7. L. lat. 54.

Compressed, the height of the body one-third of the total length, length of head about one-fourth; diameter of eye one-fourth of the length of the body, about equal to the length of the snout, and rather more than the width of the interorbital space, which is moderately flat and grooved. Cleft of mouth oblique, the lower jaw longest; the maxillary broad and truncate reaching to below the middle of the orbit, teeth numerous, minute and villiform in both jaws, those on the vomer and palatine bones on elevated ridges; præoperculum finely serrated on the posterior limb, with a number of rather strong teeth on the angle and lower limb, those on the latter pointing forwards ; infraorbital serrated. Operculum with the lower spine long and sharp. Dorsal fins not quite separate, the first spine very short, the second half the length of the third, that and the fourth, fifth, and sixth about equal ; caudal fin a little emarginate. Of an almost uniform pale pearly colour with the tip of the lower jaw, a patch on the edge of the operculum between the spines, and the dorsal, caudal, and ventral fins blackish.

This species was got in the Parramatta River. It is quite distinct from *L. colonorum*, and yet in many respects resembles it extremely closely.

Genus PSEUDOLATES, All. & M'Leay.

A genus separated from *Lates* on account of the villiform teeth on the tongue and large scales.

9. PSEUDOLATES CAVIFRONS, All. & M'Leay.

Proc. Linn. Soc., N. S. Wales, Vol. I., p. 262.

Torres Straits, Port Darwin.

Genus PSAMMOPERCA, Rich.

Seven branchiostegals ; teeth on the vomer and palatine bones, crowded, granular ; no canine teeth, tongue smooth. Two dorsals slightly continuous moving in a scaly sheath, the first with eight spines, anal with three spines. Operculum with a small and præoperculum with a strong spine, the latter with an entire lower limb. Scales rather large. East Indian and Australian seas.

10. PSAMMOPERCA WAIGIENSIS, Cuv. & Val.

Psammoperca datnioides, Richardson.

Voy. Erebus and Terror, Fishes, p. 116, pl. 57, f. 1-2.

D. 8. 1/12-13. A. 3/9. L. lat. 50-55.

Height of body one-fourth of total length. Hinder edge of præoperculum denticulated, a long spine at the angle.

North Australia.

11. PSAMMOPERCA MACROPTERA, Gunther.

Cat. Fishes, Brit. Mus., Vol. I., p. 69.

D. 8. 1/12-13. A. 3/13.

Height of body one-third of the total length, præorbital and suborbital arch strongly serrated, hinder edge of praeoperculum serrated, a triangular spine at the angle.

Dr. Gunther gives Victoria, Australia, as the habitat of this very distinct species, he must mean I think the Victoria River, North-west Australia.

Genus MICROPERCA, Casteln.

Teeth numerous and sharp, disposed in several rows on both jaws and on the palatines, no canines, tongue smooth ; operculum and præoperculum not serrated, entire, the former with two feeble points of which the lower one is much larger than the other ; the præorbital very finely serrated ; two dorsals, almost continuous, the first triangular, with eight spines; caudal rounded. Anal with three spines ; scales large. Form oval, rather high ; head attenuated ; body compressed ; no scales on the upper part of the head or snout ; no scaly sheath for the dorsals.

Australia.

12. MICROPERCA YARRÆ, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 48.

Height three times and a quarter in the total length, head four times and one-fifth in the same, eye four and a-quarter in the length of the head. Twenty scales on the lateral line, and twelve on the transverse. Eight strong spines in the first dorsal fin: the first short, the second and third the longest and nearly equal, the second dorsal has one long, straight spine and eight rays, gradually increasing in length; the anal is like the second dorsal. Scales large; mouth protractile. Colour variable, in some the back is of a purple-grey with the belly and fins yellow, in other specimens the back is green and the belly white with a black longitudinal spot on its lower part, the fins are of an orange colour bordered with black, the ventrals entirely of that colour; the body has more or less black spots; the eye is silvery. Average length from 2½ to 3 inches.

Yarra River, in brackish water.

In accordance with Count Castelnau's views I place this Fish near *Psammoperca*, but I suspect its affinity is more to the *Apogonina*.

Genus ENOPLOSUS, Lacep.

Body and vertical fins greatly elevated. Seven branchiostegals. All the teeth villiform without canines, teeth on the palatine bones and on the tongue. Two dorsals; operculum without spine; præoperculum serrated and with spinous teeth at the angle. Scales moderate. Australian seas.

13. ENOPLOSUS ARMATUS, White.

Voy. N. S. Wales, pl. 39, fig. 1. Gunth. Cat. Fishes, I., p. 81.

"Old Wife" of the Sydney Fshermen. "Bastard Dorey" of the Melbourne Fishmarket.

D. 7. 1/14-15. A. 3/15. Cœc. pylor. 15. Vert. 25.

Upper profile of head very concave, body one half as high as long, much elongate and pointed. White, with eight black transverse bands.

East and South coasts of Australia.

Group *Serranina.*

Genus CALLANTHIAS, Lowe.

Six branchiostegals. Teeth villiform, with canines in both jaws, teeth on the palatine bones, tongue smooth. One dorsal with eleven spines, the anal fin with three, operculum spiniferous, præoperculum entire. A part of the fins elongate. Scales moderate.

Madeira and Tasmania.

14. CALLANTHIAS ALLPORTI, Gunth.

Ann. and Mag. Nat. Hist., 1876, Vol. XVII., p. 390.

D. 11/10. A. 3/10. L. lat. 46.

"The height of the body is one third, and the length of the head one fourth, of the total length (without caudal). Eye longer than the snout, two-seventh of the length of the head, situated far below the upper profile. The maxillary does not extend to below the middle of the eye. Cleft of the mouth oblique, with the lower jaw slightly projecting, some of the lower canines horizontally projecting forwards. Præorbital very narrow. The lateral line ascends from its origin towards the third dorsal spine, and runs close to the upper profile, the scales above it being minute. The scales on the head advance nearly to the end of the snout; vomer with a transverse series of very strong conical teeth, a short patch of small teeth on the palatines, tongue smooth. Dorsal spines slender, gradually increasing in length, the last being as long as the head without snout. The soft dorsal and anal high. Caudal emarginate. Pectoral broad, rather shorter than the ventral, which extends to the vent. Uniform reddish (in spirits)."

Described from two specimens, 9½ inches long, sent by Mr. Morton Allport to the British Museum, from Tasmania.

Genus BREVIPERCA, Casteln.

Teeth small, rather arched, disposed in numerous series, those of the lower jaw directed backwards, a few feeble teeth on the palatines, no canines. Præoperculum rounded, finely denticulated behind and weakly crenulated below. Operculum terminating in a blunt point. One dorsal with eight spines and eleven rays. Scales large.

Australia.

15. BREVIPERCA LINEATA, Casteln.

Researches on the Fishes of Australia, p. 6.

D. 8/11. A. 3/8. P. 16.

Body short, high. Head large, the maxillary reaches to below the posterior edge of the orbit. Eye large. Dorsal spines low, increasing in length as they go backwards, the rays are much longer. The third anal spine is the longest, the second the thickest. Colour silvery, with two transverse dark bands on the head and in front, another on the cheek, and six broad longitudinal ones on the body.

Swan River, Length of specimen nine inches.

Genus ANTHIAS, Bl.

Seven branchiostegals. Teeth villiform, with canines in both the jaws, teeth on the palatine bones; tongue smooth or with small teeth. One dorsal, generally with ten spines; the anal fin with three. Caudal forked, generally one or several of the fins very elongate. Operculum spiniferous, præoperculum serrated. Scales *moderate.*

The warm seas of all parts of the world.

16. ANTHIAS RASOR, Richards.

Serranus rasor, Rich., Trans. Zool. Soc., 1849, p. 73, pl. 4, f. 1.
Gunth. Cat. I., p. 93.

Cæsioperca rasor, Casteln., Proc. Zool. Soc., Victoria, I., p. 49.

D. 10/21. A. 3/9. L. lat. 54. L. transv. 4/18. Cæc. pylor. 6.

Caudal fin forked, but none of the fins elongate, the pectoral, one fourth of the total length; the lower portions of the fins densely covered with scales; the height of the body forming one third of the total length; the head short forming one fourth of it. Shining reddish brown, with a bluish stripe from beneath the eye along the lateral line, and a subvertical oval, blackish spot below the lateral line, opposite the commencement of the soft dorsal.

Victorian and Tasmanian seas.

The generic name *Cæsioperca* was given to this species by Count Castelnau, on account of a slight departure from the more typical form of *Anthias*. There is scarcely sufficient reason I think for the establishment of a new genus.

17. ANTHIAS RICHARDSONII, Gunth.

Proc. Zool. Soc., 1869, p. 429.

D. 10/20. A. 3/9. L. lat. 60.

Differs only from the preceding species, *A. rasor*, in having the blackish spot on the side below the lateral line, of a horizontally ovate shape, and under the fifth to ninth dorsal rays.

Tasmania.

18. ANTHIAS LONGIMANUS, Gunth.

Cat. Fishes I., p. 94, pl. 7, fig. B.

D. 10/20. A. 3/8. L. lat. 65.

The height of the body is four times and three-fourths in the total length. Caudal fin forked; the pectoral elongate, reaching to the vertical from the soft portion of the dorsal fin, and one fourth of the total length; head entirely scaly; fins covered for the greater part with scales. Vomerine teeth in a quadrangular patch. Coloration uniform red.

Port Jackson.

Genus NEOANTHIAS, Casteln.

Seven branchiostegals, teeth villiform, without canines in either jaw, but with an outer line of larger teeth in front; teeth on the palatine bones and on the tongue. One dorsal fin with ten spines, anal with three. Operculum with two flat spines, præoperculum finely and equally serrated, scales large; no denticulations on the præorbital; some of the pectoral rays elongate.

Australia.

19. NEOANTHIAS GUNTHERI, Casteln.

Pro. Linn. Soc., N.S. Wales, Vol. III., p. 367.

A full description is given by Count Castelnau, *(loc. cit.)* of this beautiful fish, which is occasionally taken outside the heads of Port Jackson.

Genus SERRANUS, Cuv.

Seven branchiostegals. Teeth villiform, with very distinct canines in both jaws; teeth on the palatine bones; tongue smooth. One dorsal fin, mostly with nine or eleven, rarely with eight, ten or twelve spines; anal fin with three. Operculum with two or three acute points; præoperculum more or less serrated, *without* spinous teeth on the lower limb. Scales *small.*

Temperate and Tropical seas.

20. SERRANUS AUSTRALIS, Casteln.

Researches on the Fishes of Australia, p. 7.

D. 11/13. A. 3/8.

Body compressed, ovate, rather high, with the anterior profile very acute; lower jaw longer than the upper; caudal fin rounded rather pointed; dorsal and anal fins high; the operculum has one strong point, and its membranous portion extends in another behind this; over this is a strong notch. Canines small. Colour brownish-black entirely covered with rather minute, numerous, rounded white spots. Length of specimens five to six inches.

Cape York and Darnley Island.

21. SERRANUS STIGMOPOMUS, Richardson.

Ichth. China, p. 232. Gunth. Cat. I., p. 111.

D. 9/17. A. 3/8.

Caudal fin rounded, præoperculum finely serrated, with rather stronger denticulations at the angle. Brown, with eight regular darker cross bands; a round black spot between the two upper opercular spines; dorsal fin with a pale edge, pectoral and anal fins with a dark one.

North West Coast of Australia.

This is identical with the *Epinephelus bœlang* of Bleeker, with *Serranus bœnak*, of Cuv. & Val., Bleek., Gunth., and Kner., and with *Serranus nigrofasciatus* of Homb. Jacquin, Voy. Pole Sud., Poiss., p. 36, tab. 2, fig. 1. It has a very wide distribution throughout the Indian seas.

22. SERRANUS PACHYCENTRUM, Cuv. & Val.

Gunth. Cat. I., p. 116.

D. 9/15. A. 3/8.

Caudal fin rounded, both limbs of the præoperculum, and lower limbs of the inter and suboperculum finely denticulated; lateral scales each with a slight keel, forming together longitudinal lines. Colour uniform light brown in spirits.

Port Darwin; one specimen four inches long.

23. SERRANUS GUTTATUS, Bl.

Gunth. Cat. I., p. 113.

D. 9/16. A. 3/9.

Caudal fin rounded; denticulations of the præoperculum obsolete, its posterior limb not emarginate. Brownish black; head, body, and all the fins with round, blue, black-edged spots, the caudal, anal, and hinder half of the dorsal fins white-edged.

North Coast of Australia.

A species of wide range throughout the South and Indian Seas. Indentical with *S. myriates* of Cuv. & Val., and other authors, and according to Dr. Bleeker, the same or a variety of his *Serranus Argus*.

24. SERRANUS OUATALIBI, Cuv. & Val.

Gunth. Cat. I., p. 120.

D. 9/15. A. 3/9. L. lat. 85. Cæc. pylor. 8. Vert. 10/14.

Caudal fin rather truncated; sub and inter-operculum slightly denticulated at their junction; præoperculum serrated, teeth of the angle not prominent, lower limb entire; the upper spine of the operculum largest and longest. Maxillary bone not reaching to the level of the hinder edge of the eye; diameter of the eye 5½ in the length of the head; length of the head 3½ in the total. Red: head and body, and sometimes dorsal fin covered with numerous small, blue, black-edged spots; a pair of larger black spots on the symphysis of the lower jaw, and another on the back of the tail behind the dorsal.

Lord Howe's Island.

This is a species of the West Indies and tropical Atlantic, but is stated on the authority of Dr. Gunther, as having been taken at Lord Howe's Island on one of the voyages of H.M.S. "Herald" to that Island. I suspect it will prove to be a different species.

25. SERRANUS FUSCOGUTTATUS, Rupp.

Gunth. Cat. I., p. 127.

D. 11/14-15. A. 3/8-9.

Caudal fin rounded; denticulations of the præoperculum stronger at the angle; light brown, marbled with darker and covered with rounded blackish-brown spots; a large black blotch behind the dorsal fin across the back of the tail.

North and North-east Coasts.

Identical with *S. horridus*, Cuv. & Val., and *S. dispar*, Playfair.

26. SERRANUS CORALLICOLA, Cuv. & Val.

Serranus altivelioides, Bleek., Gunth. Cat. I., p. 127.

D. 11/15. A. 3/8. L. lat. 86.

Caudal fin rounded; the length of the head is three times and one-fifth in the total length; diameter of the eye one-fifth of the length of the head; the upper profile of the head rather convex; sub and inter-operculum entire. Yellowish; head, body, and all the fins with small round brown spots.

North-west Coast. Port Darwin.

27. SERRANUS MARGINALIS, Bl.

Gunth. Cat. I., p. 135.

D. 11/15-16. A. 3/8. L. lat. 80-90. Vert. 9/15.

Caudal fin truncated. Length of the head twice and one-third in the total; diameter of the eye four times and two-thirds in the length of the head. Præoperculum with rather stronger denticulations on the angle, sub and inter-operculum entire. The maxillary bone reaches to the level of the posterior margin of the eye. Pectorals distant from the anal and reaching a little behind the tip of the ventrals. Colour brownish or yellowish; the spinous part of the dorsal fin, and sometimes the caudal fin black-edged.

Darnley Island.

Dr. Bleeker makes this species to be identical with his *Epinephelus fasciatus*. If so, the fresh specimens are distinctly marked with six or seven short brown fasciæ on the back. It is also identical with *S. oceanicus* of Cuv. and Val. It is widely distributed throughout the Indian and Chinese Seas.

28. SERRANUS DIACANTHUS, Cuv. & Val.

Gunth. Cat. I., p. 110.

D. 11/15-16. A. 3/8. L. lat. 90.

Caudal fin rounded; eye nearly one-fifth of the length of the head; length of the head one-third of the total; sub and inter-operculum entire; the inferior limb of the præoperculum entire with two large spines at the angle and the posterior limb strongly denticulated. Colour light bluish-grey, with fins dark brown, and with rather irregular cross bands, and a number of round dark spots on the body.

Cape York. (Castelnau).

29. SERRANUS CRAPAO, Cuv. & Val.

Gunth. Cat. I., p. 137.

D. 11/15. A. 3/8. L. lat. 80.

Caudal fin rounded; head one-third of the total length; diameter of the eye one-seventh of the length of the head, angle of the præoperculum with stronger denticulations; sub and inter-operculum entire. Brownish, all the parts with rounded brown spots.

Port Essington, Torres' Straits.

Serranus pantherinus, *maculosus*, *bontoo*, and *suillus*, of Cuv. and Val., are the same as this species.

30. SERRANUS DAMELII, Gunth.

Ann. and Mag. Nat. Hist., 1876, fourth series, Vol. XVII., p. 391.

"Black Rock Cod" of the Sydney Fishermen.

A good description of this species is given by Count Castelnau at page 365 of the third volume of the Proceedings of the Linnean Society of New South Wales.

East Coast, N. S. Wales.

31. SERRANUS ALATUS, All. & Macl.

Proc. Linn. Soc., N.S. Wales, Vol. I., p. 264, pl. 4, fig. 2.

South Coast New Guinea, ("Chevert" Exp.)

32. SERRANUS CARINATUS, All. & Macl.

Proc. Lin. Soc., N. S. Wales, Vol. I., p. 265, pl. 4, fig. 3.

Torres' Straits, ("Chevert" Exp.)

33. SERRANUS GUTTULATUS, Macl.

Proc. Linn. Sc., N. S. Wales, Vol. III., p. 33, pl. 2.

Port Jackson.

34. SERRANUS UNDULATO-STRIATUS, Peters.

Monatsber, Ak. Wiss., Berlin, 1866, p. 518.

Described by Count Castelnau in Proc. Linn. Soc., N. S. Wales Vol. III., p. 366.

It is very likely I think to be the same as the preceding species, but the descriptions do not tally.

Port Jackson.

35. SERRANUS HEXAGONATUS, Cuv. & Val.

Gunth. Cat. I., p. 140.

D. 11/15-17. A. 3/8. L. lat. 80.

Caudal fin rounded. The length of the head is three times and one-third to three and a-half in the total; diameter of the eye nearly one-fifth of the length of the head, and larger than the distance between the eyes. The upper maxillary bone reaches beyond the level of the posterior margin of the eye. The angle of the præoperculum with stronger spinous teeth; sub and inter-operculum entire; the pectoral fin reaches as far as the ventral—that is, not to the vent. Brownish, covered all over with large rounded or hexagonal spots.

North and East Coasts.

A species of very wide range and identical with *S. stellans* and *foveatus*, of Cuv. & Val Dr. Gunther considers *S. merra* a mere variety of *hexagonatus* Dr. Bleeker regards them as distinct species. We have both in Australian waters.

36. SERRANUS GILBERTI, Richards.

Gunth. Cat. I., p. 148.

D. 11/16-17. A. 3/8-9. L. lat. 75-80.

Caudal fin rounded; length of head three times and a-half in the total length; the diameter of the eye four times and two-thirds in the length of the head, larger than the distance between the eyes, but equal to the distance of the eye from the end of the snout. Pectoral fins very large, nearly equal to the length of the head, and reaching to the commencement of the anal fin, the maxillary bone reaches beyond the level of the posterior margin of the eye. Præoperculum finely serrated, with stronger denticulations at the angle; sub and inter-operculum entire. Brownish, all parts with large, rounded, dark-brown spots; behind the maxillary bone a black streak.

North and North-east Coast. Torres' Straits.

Identical with *S. megachir*, Richards, and *Epinephelus pærdalis*, Bleeker, Atlas Ichthyol. Perc. tab. 53, fig. 3.

37. SERRANUS ALTIVELIS, Cuv. & Val.

Gunth. Cat. I., p. 152.

Cromileptes altivelis, Bleek., Atlas Ichthyol. Perc., tab. 44, fig. 3.

D. 11/18-19. A. 3/9-10.

Caudal fin rounded; dorsal and anal fins much elevated; upper profile of the head concave. Præoperculum finely and equally serrated. Yellowish, all parts with distant round black spots edged with white.

Port Essington.

38. SERRANUS ARMATUS, Casteln.

Researches on the Fishes of Australia, p. 7.

I give Count Castelnau's description of this Fish in full. It is clearly not a *Serranus*.

"It is with doubt that I make a *Serranus* of this fish, on account of its dentition. The general form is short and high; the head is contained a little over three times in the total length, and the diameter of the eye four and a-half times in the length of the head; the height of the body is about equal to the length of the head; the teeth are small and villiform on both of the jaws, and on the upper one there are two strong canines on each side in front; on the lower jaw there are two similar canines, and at about half-way to the junction with the upper jaw there is another strong canine; the teeth of the palate are small but numerous. There are no scales on the maxillary bone; the head is covered with minute scales; the præopercule is rounded and finely denticulated; the denticulations are rather stronger on the lower edge, and slightly directed forward; the opercule has a strong, flat spine at its posterior angle; the scales of the body are of moderate size, three or four times larger than those of the head; the lateral line runs over about seventy transverse scales, and these number about thirty-five on the transverse line; these scales are ciliated on the posterior edge; the dorsal fin is formed of ten spines and twenty rays; the soft portion of this fin is higher than the other, and the membranes uniting the rays are covered with scales; caudal large, contained less than six times in the total length; it is slightly concave; the anal has three spines of moderate size, the third being the longest; it has seven soft rays; the ventrals are a little in front of the pectorals, or on the line of the upper part of their insertion; the pectorals are rather longer than the caudal, and formed of sixteen rays; all the fins are scaly. The colour is uniform, of a reddish-yellow, probably orange; the fins are more red; the extremity of the fins, and the upper part of the head, are dark; no spots or bands. Length of specimen over eleven inches. Form of *Sebastes*. Swan River."

Serranus lepidopterus, as described by Richards, (Ann. and Mag. Nat. Hist., 1842, Vol. IX., p. 18.) cannot I think be a *Serranus* at all, his description is taken only from a drawing made by a convict at Port Arthur, Tasmania, and is in all likelihood incorrect.

Genus PLECTROPOMA, Cuv.

Like *Serranus*, but with spinous teeth directed forwards on the lower limb of the præoperculum.

Tropical Seas.

39. PLECTROPOMA MACULATUM, Bl.

Gunth. Cat. I., p. 156. All. & Macl., Proc. Linn. Soc., N. S. Wales, Vol. I., p. 265. Bleek., Atlas Ichth. Perc. tab. 13, fig. 3.

D. 8/10-11. A. 3/7-8. L. lat. 110. Vert. 10/14.

Præoperculum exceedingly finely serrated behind, with three spinous teeth below; sub and inter-operculum entire. Caudal fin truncate in young specimens, in older ones emarginate. Red: head, body, and vertical fins with blue spots, those of the head and of the front part of the body oblong, elliptical, arranged in irregular longitudinal rows, the others circular and smaller.

Fair Cape. ("Chevert" Exp.)

40. PLECTROPOMA LEOPARDINUM, C. & V.

Gunth. Cat. I., p. 157. Bleek. Atl. Ichthyol. Perc. t. 18, f. 3.

D. 8/10-11, vel. 7/11-12. A. 3/7-8. L. lat. 120.

Præoperculum minutely serrated behind. with five spinous teeth beneath, the three lowest close together. Caudal fin slightly emarginate. Colour brownish-red, with numerous, small round, blue spots on the head, body, vertical fins and base of the pectorals; tail with a yellow posterior edge.

North Australia.

41. PLECTROPOMA NIGRORUBRUM, Cuv. & Val.

Gunth. Cat. I., p. 158. Voy. Astrol. Poiss., pl. 4. fig. 1.

D. 10/17-18. A. 3/8. Cæc. pylor. 8.

Caudal fin truncated. Præoperculum finely serrated behind, with two strong spinous teeth below, one of them at the angle. Colour reddish-yellow, with five black cross bands.

West Australia.

42. PLECTROPOMA ANNULATUM, Gunth.

Gunth. Cat. I., p. 158.

An excellent description of this species is given by Count Castelnau in his Paper on the Fishes of Port Jackson in page 369, of Vol. III., of the Proceedings of the Linnean Society of New South Wales.

43. PLECTROPOMA SEMICINCTUM, Cuv. & Val.

Gunth. Cat. I., p. 160.

D. 10/18-20. A. 3/7-8. L. lat. 45.

Præoperculum finely serrated behind, with three equal strong teeth below, one of which is at the angle. Caudal fin truncate. Red, with eight brown cross bands, lost on the sides. Side of the head with indistinct brownish streaks.

Swan River; Port Jackson.

44. PLECTROPOMA SUSUKI, Cuv. & Val.

Gunth. Cat. I., p. 160. Proc. Zool. Soc., 1867, p. 100.

D. 11/14. A. 3/8. L. lat. 110.

Caudal fin truncate, one sixth of the total length, præoperculum finely serrated behind, with from two to five larger teeth on the lower limb. Dorsal fin rather elevated, without notch. Colour brownish-grey, with eight or nine darker cross-bands.

Port Jackson. (Gunther).

45. PLECTROPOMA DENTEX, Cuv. & Val.

Gunth. Cat. I., p. 160. Richards, Voy. "Ereb. and Terr.," pl. 57, fig. 3-5.

D. 10/18. A. 3/8. Cæc. pylor. 7.

Præoperculum with a few inconspicuous denticulations behind, and three or four small spinous teeth below. Caudal fin rounded. Olive, marbled with blackish; black spots on the sides of the head, and on the snout.

King George's Sound.

46. PLECTROPOMA OCELLATUM, Gunth.

Brench., Cruise of the "Curaçoa," p. 416, pl. 29.

Plectropoma cyanostigma, Gunth. Cat. I., p. 161.

D. 13/15. A. 3/8. L. lat. 100.

The height of the body is nearly equal to the length of the head, and two-fifths of the total (without caudal); præoperculum with three spines beneath, the anterior of which is the strongest and sometimes bifid. Brownish: head, body, and base of the fins with numerous roundish spots, bluish in the centre, and black round the margin; they are more numerous, and also relatively smaller in old examples than in younger ones, those on the head and fins without bluish centre.

Port Jackson. Australian Seas.

This is the "Wirrah" of the aborigines, a common fish, but valueless for food.

47. PLECTROPOMA CINCTUM, Gunth.

Gunth. Cat. I., p. 162.

D. 13/15. A. 3/9. L. lat. 100.

Height of body three times and one-third in the total length, the length of the head is one-third of the same. Præoperculum strongly serrated, with three large spinous teeth on the lower limb, the anterior of which is the strongest. Caudal fin rather rounded. Reddish brown, with six dark brown cross-bands encircling the body and tail: sides of the head with two bands of the same colour from the eye to the opercles, fins black, whitish edged.

Norfolk Island.

48. PLECTROPOMA SERRATUM, Cuv. & Val.

Gunth. Cat. I., p. 163. Dum. D'Urv. Voy. Pole Sud., pl. 3, fig. 1.

D. 13/16. A. 3/9. Cæc. pylor. 8.

Præoperculum strongly serrated behind, with two large spinous teeth below, the anterior one strongest. Caudal fin truncate. Brown; an oblique blackish band from the eye to the angle of the præoperculum, and some black spots on the sides of the body.

King George's Sound.

49. PLECTROPOMA RICHARDSONII, Gunth.

Proc. Zool. Soc., 1861, p. 391, pl. 38.

D. 10/18. A. 3/8. L. lat. 105.

This species seems to differ from *P. dentex* chiefly in colour. The dentition is very strong, the præoperculum is rounded, finely serrated posteriorly, and with one small spine pointing forwards in the middle of the inferior limb. Caudal fin truncate. Upper part of the head, cheeks, back of the trunk, and the spinous dorsal, bright red, the remainder of the fish yellow, with a very broad, irregular, brown band from the axil to the lower half of the caudal. Irregular small blue spots, mostly edged with brown are scattered over the head and upper parts of the body, and some large dark brown spots on the brown band. Fins immaculate, except the spinous dorsal, which has a few small blue spots.

Freemantle, West Australia.

50. PLECTROPOMA VARIEGATUM, Casteln.

Researches Fishes of Aust. p. 7.

"Lateral line continued on the caudal fin; teeth rather long, conical, sharp, distant one from the other, with a second and internal series of others almost similar, forming two bunches in front; two very large canines in front of each jaw; a transverse line of very fine teeth on the palate and vomer having the form of a V; mouth very large; præoperculum very finely serrated behind with three strong notches beneath; one dorsal formed of a low spinous portion with seven spines, and of a soft one much higher, having one spine and seven rays; the caudal is strongly emarginate; the anal is formed of three feeble spines and of seven rays; scales of the body very small; the general colour is brown, covered with darker transverse narrow lines; similar lines are disposed obliquely on the cheeks and on the opercles; the fins are spotted with black; the pectorals are black, with their posterior third white. Fifteen inches long. Cape York."

Genus TRACHYPOMA, Gunth.

Like *Plectropoma,* but without canine teeth.

Pacific.

51. TRACHYPOMA MACRACANTHUS.

Gunth. Cat. I., p. 167, pl. 13, fig. B.

D. 12/14. A. 3/6. L. lat. 65. Cæc. pylor. 13.

Height of body three times and a-half in the total length, the length of the head is one-third of the same. Posterior limb of præoperculum strongly denticulated, the inferior with three strong spinous teeth, the anterior of which is the largest; sub and interoperculum entire. Brownish (in spirits), covered all over with very small whitish, darker-edged specks.

Norfolk Island.

Genus GRAMMISTES, Cuv.

Seven branchiostegals. Teeth villiform, without canines, teeth on the palatine bones, tongue smooth. Two dorsals, the first with seven spines. Anal spine none. Operculum and præoperculum spiniferous without serrature. Scales minute, enveloped in the epidermis.

Indian Seas.

52. GRAMMISTES ORIENTALIS, Bl.

Gunth. Cat. I., p. 171.

D. 7. 1/13. A. 0/8.

Body oblong, compressed; caudal fin rounded. Præoperculum with three spines, tendril rudimentary. Black or blackish-brown, generally with six or seven whitish longitudinal bands.

North Australia.

Genus DIPLOPRION, Cuv. & Val.

Seven branchiostegals. Teeth villiform without canines, teeth on the palatine bones, tongue smooth. Two dorsals, the first with eight spines. Anal with two. Operculum spiniferous, præoperculum with double denticulated limb. Scales small.

Indian Seas.

53. DIPLOPRION BIFASCIATUM, Cuv. & Val.

Gunth. Cat. I., p. 174. Bleek. Atl. Ichth., Perc., tab. 68, fig. 3.

D. 8. 15. A. 2/12. Vert. 12/13. Cæc. pylor. 3.

Body twice and a-half as long as high, compressed; the first dorsal fin half as high as trunk; ventrals long, pointed. Yellowish with two broad black cross bands.

Port Darwin.

Genus MYRIODON, Bris. de Barnev.

Seven branchiostegals. Teeth minute; villiform teeth on the palate; tongue smooth. One dorsal, with twelve or thirteen spines; anal fin with three. Operculum spiniferous; præoperculum denticulated, with spinous teeth on the lower limb, directed forward. Scales *moderate*. Pyloric appendages small or none.

North Australian Seas.

54. MYRIODON WAIGIENSIS, Quoy. & Gaim.

Gunth. Cat. I., p. 175. Bleek. Atl. Ichth. Perc., tab. 19, fig. 1.

D. 12-13/9-12. A. 3/5. L. lat. 42. L. trans. 8/17. Vert. 9/16.

Height of body one-third of total length, and equal to the length of the head, the diameter of the eye is one-third of the latter. On each side between the two nasal openings is a short membranaceous appendage. Præoperculum with three or four spinous teeth beneath, directed forward; operculum with a single spine. Caudal fin very slightly emarginate: the second spine of the anal very long and strong. Greyish, marbled with grey and brown.

Port Essington. Port Darwin.

Genus GENYOROGE, Cuv.

Seven branchiostegals. Teeth villiform with canines in both jaws, teeth on the palatine bones, tongue smooth. One dorsal with ten or eleven, rarely with more spines; anal fin with three. Operculum with two or three points; above the angle of the præoperculum, a deep notch, as deep as broad, receiving a more or less spinous knob of the inter-operculum. Scales moderate.

Indian Seas and West Pacific Ocean.

55. GENYOROGE SEBÆ, Cuv. & Val.

Gunth. Cat. I., p. 176. Bleek. Atl. Ichth. Perc., tab 72, fig. 2.

D. 11/16. A. 3/9-11. L. lat. 40. Cæc. pylor. 4. Vert. 10/14.

Head one-third of the total length, equal to the height of the body; the diameter of the eye is four times and a-half in the length of the head; præoperculum serrated behind and below; caudal fin emarginate. Colour yellowish, with three broad, blackish (reddish violet) cross bands.

North Australia. Percy Islands.

56. GENYOROGE BENGALENSIS, Bl.

Gunth. Cat. I., p. 178. Bleek. Atl. Ichth. Perc. tab 55, fig. 4.

D. 10/15-16, vel. 11/14-15. A. 3/8-9.

The length of the head is equal to the height of the body, and three times and a-half in the total length; the diameter of the eye is three times and a-half in the length of the head. Præoperculum denticulated behind and below. Caudal fin emarginate. Colour yellowish, on each side four or five blue longitudinal bands.

Port Jackson. (Casteln. Fishes of Port Jackson).

57. GENYOROGE UNICOLOR, All. & Macl.

Proc. Linn. Soc., N.S. Wales, Vol. I., p. 266, pl. 4, fig. 1.

Percy Islands. (Chevert Exp.)

Genus MESOPRION, Cuv.

A genus not differing from *Genyoroge*, except that the notch above the angle of the præoperculum is either wanting or smaller.

All tropical Seas.

58. MESOPRION CARPONOTATUS, Rich.

Ann. and Mag. Nat. Hist. 1842, Vol. IX., p. 28. Gunth. Cat. I., p. 190.

D. 10/15. A. 3/10. L. lat. 68.

The length of the head is three times and two-thirds in the total length, and equal to the height of the body, the diameter of the eye is four and one-third in the length of the head. Præoperculum with a few scarcely visible denticulations, slightly emarginate; operculum rounded, as in *Sparus*, with a shallow re-entering arc; superscapula entire. Caudal fin truncate; the point of the pectoral falls short of the anus. The fourth dorsal spine longest, the second and third of the anal fin nearly equal. Coloration uniform, with a black spot at the root of the pectoral fin.

North-west Coast.

59. MESOPRION WAIGIENSIS, Quoy & Gaim.

Gunth. Cat. I., p. 191.

D. 10/14. A. 3/9. L. lat. 75.

Height of the body three times and two-thirds in the total length, and equal to the length of the head, the diameter of the eye is four times and two-thirds in the latter. Præoperculum very finely serrated, notch conspicuous, knob rather indistinct. Caudal fin emarginate; pectoral distant from anal fin; the third and fourth dorsal spines longest; the second of the anal stronger but not longer than the third. Colour uniform olive (in a dried state), with indistinct, oblique streaks above the lateral line, and longitudinal ones beneath; base of the pectoral with a narrow black spot.

Port Essington.

60. MESOPRION JOHNII, Bl.

Gunth. Cat. I., p. 200. Bleek. Atl. Ichth. Perc. tab. 6o, fig. 3.

Mesoprion unimaculatus, Cuv. & Val., Richards, &c.

D. 10/14. A. 3/8. L. lat. 48.

Height of body three times and a-half in the length, and nearly equal to the length of the head. Notch of præoperculum, and knob of interoperculum, conspicuous; præoperculum finely denticulated above, and more coarsely below the notch; upper maxillary bone reaching to below the anterior half of the eye. Caudal fin slightly emarginate; pectorals not reaching to the anal; the third, fourth, and fifth dorsal spines longest, the second of the anal stronger, but not longer than the third. Yellowish, with indistinct, oblique streaks above the lateral line, and longitudinal ones beneath; a large oval black spot on the lateral line beneath the anterior half of the soft dorsal.

North Australia. Port Darwin.

61. MESOPRION ANNULARIS, Cuv. & Val.

Gunth. Cat. I., p. 204. Bleek. Atl. Ichth. Perc., tab. 23, fig. 1.

SYN.—*chirtah*, Bleek., *rubellus*, Cuv. & Val., *metallicus*, Bleek., *sanguineus*, Bleek., *erythrinus*, Gunther.

D. 11/13-15. A. 3/8-9. L. lat. 56-60.

Height of body twice and three-quarters in the total length, the length of the head thrice and a-half, the diameter of the eye one-fourth of the latter. Notch and knob of the opercles indistinct, except in young specimens. Caudal fin truncate; pectorals reach to the anal; fourth, fifth, and sixth dorsal spines longest, the second of the anal fin much stronger than the third. Red, a blackish streak from the first dorsal spine to the eye; back of the tail with a black, white-edged spot; these marks are not visible in some specimens.

North Australia.

62. MESOPRION VITTA, Quoy & Gaim.

Gunth. Cat. I., p. 207. Bleek. Atl. Ichth. Perc, tab 62, fig. 5.

SYN.—*M. enneacanthus*, *phaiotæniatus*, and *Ophusenii* of Bleeker.

D. 10/13-14. A. 3/8. L. lat. 55-62.

Height of body three times and a-half in the length and equal to the length of the head, diameter of the eye one-fourth of the latter; upper profile of head very slightly concave, notch and knob of opercles conspicuous. The upper maxillary bone scarcely reaches to below the middle of the eye. Caudal fin truncate or very slightly emarginate; pectoral not reaching to the anal; dorsal spines slender, the third and fourth longest; the second and third of the anal about equal in length, the second stronger. Reddish with oblique streaks above, and longitudinal ones beneath the lateral line, a broader blackish band from the eye to the back of the tail, dorsal and caudal fins blackish, the others yellowish; no black spot at the base of the pectoral.

North Australia.

63. Mesoprion superbus, Casteln.

Diacopus superbus, Casteln., Proc. Linn. Soc., N. S. Wales, Vol. II., p. 228.

Fully described in "*loc. cit.*" Is found in Moreton Bay where it is known as "Red Bass," and is said to be a good table fish.

64. Mesoprion obscurus, *n. sp.*

D. 10/12. A. 3/8. L. lat. 48.

Length of head and height of body alike and one-third of the total length. Upper profile of head straight, eye about its own diameter from the snout, the maxillary scarcely reaching to below the middle of the eye; præoperculum finely serrated behind and only slightly notched. Colour dingy black, with numerous narrow indistinct cross-bands of a lighter hue; fins all more or less blackish excepting the pectorals, tail truncate.

Endeavour River.

65. Mesoprion roseigaster, *n. sp.*

D. 10/13. A. 3/9. L. lat. about 40. L. tr. 6/15.

Height of body and length of head about equal, and one third of the total length. The diameter of the orbit is nearly one-fifth of the length of the head, the distance from the eye to the snout is equal to two diameters, and the interorbital space to one and a-quarter. The profile of the head is straight, but descends to the snout at an angle of 45°, the height of the præorbital, which is naked, is equal to one and a-half diameter of the eye, the lips are thick, the membrane almost entirely concealing the maxillary bone, which reaches to below the middle of the eye. There are several canine teeth in the lower jaw, no very conspicuous ones in the upper. Præoperculum very slightly notched, and a little jagged about the angle. Scales large on the body, very small on the caudal and soft dorsal and anal fins. The fourth dorsal spine longest; the second anal very strong, not so long as the third; the middle rays of the soft dorsal rather the longest; in the anal the first rays are the longest, giving it a truncate appearance behind; the caudal is slightly emarginate; the pectorals reach almost to the vent, and beyond the extremity of the ventrals. The colour (in spirits) is on the upper parts of the head and body of a bluish silvery hue, with a vertical pearly mark on each scale and on the lower parts of a beautiful rosy pink, (in the fresh state the whole body was more or less pink). Length eighteen inches.

Rockingham Bay.

I am indebted to Mr. Haswell, the Director of the Brisbane Museum, for a specimen of this very beautiful fish, it is said to be from fresh-water.

Genus NEOMESOPRION, Casteln.

A genus formed by Count Castelnau for a species of *Mesoprion* having only nine spines in the dorsal fin.

66. NEOMESOPRION UNICOLOR, Casteln.

Researches on the Fishes of Australia, p. 8.

"The body is oval, high; the upper profile strongly convex; the height is contained a little over twice and a-half in the total length without the caudal; the head is twice and two-thirds in the same; the eye is a little over four times in the length of the head, and nearly once and a-half in the snout; the scales on the front part of the head are very minute; those of the opercles as large as those of the body; the opercule is pointed; the dorsal is formed of nine spines, of which the second is the longest, and the others go decreasing in length, and of fifteen rays; the caudal is strongly emarginated; the anal has three spines, and nine rays; the first of the spines is short, and the two others about equal, but no longer than one-half the height of the rays; the pectorals are large and formed of fourteen rays; the lateral line runs over sixty-four scales. The colour, in spirits, seems to have been silvery, with a yellow tinge; the fins yellow. The length of the specimen is eleven inches. Cape York."

Genus GLAUCOSOMA, Temm. & Schleg.

Eight branchiostegals. Teeth carminiform in the jaws, on the vomer and palatine bones; the rest of the mouth and tongue densely covered with very minute villiform teeth. No canines. One dorsal fin, the spinous portion low, consisting of eight spines; anal spines three; præoperculum slightly serrated. Scales ctenoid, those on the body rather large; head entirely covered above and below with small scales. Eye large. Lateral line nearly straight.

67. GLAUCOSOMA HEBRAICUM, Richards.

Voy. "Ereb. & Terr." Fishes, p. 27, pl. 17.

Jew Fish of the Colonists.

D. 8/11. A. 3/9. L. lat. 48. L. transv. 10/20.

The height of the body is three times and a-half in the total length, and nearly equal to the length of the head; the diameter of the eye is one-fifth of the latter, and is about equal to the height of the præorbital bone. The maxillary bone reaches to beneath the posterior third of the eye, and is truncate. The nostrils are large, contiguous, and immediately in front of the eye, the snout entirely scaly, operculum with two flat obtuse lips; suprascapula not visible. Caudal fin truncate with slightly convex angle; the first four or five rays of the dorsal fin longer than the others, the fourth elongate. Back more or less distinctly spotted with black.

West Australia. Length thirty-one inches.

68. Glaucosoma scapulare, Ramsay, (M.SS.)

[Plate 13.]

B. 8. D. 8/11. A. 3/9. L. lat. 50. L. transv. 11/20.

Form oblong, compressed; the height of the body is one-third of the total length, the length of the head a little less; the eye is very large, the diameter of the orbit being one-fourth of the length of the head, equal to its distance from the extremity of the upper jaw, and greater than the width of the interorbital space, which is convex transversely. The nostrils are large, placed immediately in front of the eyes, and almost contiguous, the posterior one the largest. Teeth in the jaws short, strong, pointed and a little curved, placed in two tolerably regular rows on the edge of the bone, the exterior row in the upper jaw, and the interior in the lower being the largest; teeth of the same description but smaller on an elevated ridge on the vomer and palatine bones; all the rest of the mouth and the tongue densely clothed with very minute villiform teeth; no canines. The profile of the head descends in a gentle curve to the front of the eyes opposite the nostrils where there is a slight concavity, it then bulges out towards the snout, which is truncate at its extremity. The cleft of the mouth is oblique, the lower jaw is considerably longer than the upper, but shuts into it, the rather swollen extremity of the lower jaw being received into a toothless space in the centre of the upper. The maxillary bone is large and triangular, and reaches backwards nearly to the vertical from the posterior margin of the orbit. Every portion of the head is closely covered with hard, adherent, small ctenoid scales, excepting the truncate space on the snout; the dorsal, caudal and anal fins are also clothed on their basal portions with small scales; the scales on the body are rather large. The præorbital bone has a smooth, straight edge and its height is little more than half the diameter of the orbit; the præoperculum has a well defined central ridge and is broadly rounded and serrated towards the angle; the operculum is without visible point; the coracoid is large, free, and scaly on its lower half; the scapular bone is free, scaleless, covered with a black skin, rounded and crenulated towards the extremity, and very large. The spinous portion of the dorsal fin is low, the eighth spine the longest, but less than half the length of the first rays; the caudal fin is slightly emarginate; the first and second anal spines short, the third more than three times the length of the first spine, and one-half the length of the second ray. Pectoral fins rather short, but extending slightly beyond the ventrals. Colour uniform silvery, each scale on the body seemingly with a black spot, caused by the black skin showing through the base of the scales. Fins immaculate; axil black. Length twenty inches.

Port Jackson.

One specimen of this curious fish was brought to Mr. Ramsay of the Australian Museum a few weeks ago. As far as is known it is unique.

Genus Bostockia, Casteln.

Teeth numerous, small, and villiform on the jaws, vomer and palatine bones, tongue smooth. One dorsal with eight spines, anal with three. Operculum with a bifid spine, præoperculum with spines at its lower edge. Scales small. Head cavernous, without scales.

69. Bostockia porosa, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 126.

D. 8/16. A. 3/11.

Upper profile convex, head rather elongate and pointed, lower jaw longer than upper. Height of body four and one-third times in the total length, eyes as long as the snout, and four and a-half times in the length of the head; nostrils large; opercles scaly, præoperculum with strong spinous teeth directed forwards on the lower edge, smaller but similar ones on the anterior edge of the upper limb; the third dorsal spine the longest. Caudal fin rounded, the soft dorsal and anal fins having their middle rays longest. Colour uniform dark brown, with the fins black. Length of specimen five inches.

Fresh-water in the interior of Western Australia.

Group *Priacanthina.*

Genus Priacanthus, Cuv. & Val.

Six branchiostegals. All the teeth villiform, without canines; teeth on the palatine bones, tongue smooth. One dorsal with ten spines, anal with three. Operculum with an indistinct point; præoperculum serrated with a more or less prominent, flat, crenulated angle. Scales small, rough, snout covered with ctenoid scales. Lower jaw with prominent chin; eye large.

Tropical Seas.

70. Priacanthus macracanthus, Cuv. & Val.

Gunth. Cat. I., p. 215. Casteln. Proc. Linn. Soc. N. S. Wales, Vol. III., p. 369.

Priacanthus Bleekeri, Casteln., Proc. Zool. Soc. Vic., Vol. II., p. 100.

D. 10/13-14. A. 3/14-15. L. lat. 80-85.

A description by Count Castelnau of this species will be found in page 269 of the third volume of the Proc. Linn. Soc. N.S. Wales.

Port Jackson.

71. Priacanthus benmebari, Temm. & Schleg.

Gunth. Cat. I., p. 218.

D. 10/13. A. 3/14. L. lat. 75-80.

The height of the body is three times and a-half, and the length of head three times and two-thirds in the total length, the diameter of the eye is two and three-quarters in the latter. Posterior opening of the nostril elliptical, about twice and a-half as long as broad. Angle of præoperculum slightly obtuse, with a flat, rather elongate serrated spine, operculum with two very small spines; sub and inter-operculum with excessively fine denticulations. Caudal fin truncated, dorsal and anal spines very slender, neither rough nor striated; the last of the dorsal hardly longer than the eighth and ninth, and once and a-half as long as the second; the ventral fins reach to, but are shorter than the anal. Red: dorsal, anal, and ventral fins paler, with round yellow spots.

Sydney (Gunth. Ann. Nat. Hist., 1867, Vol. XX., p. 57).

Group *Apogonina.*

Genus Ambassis, Cuv. & Val.

Six branchiostegals. Teeth villiform, without conspicuously larger canines; teeth on the palatine bones. Two dorsals, the first with seven, the anal fin with three spines, a procumbent spine in front of the dorsal. Operculum without a prominent spine; the lower limb of the præoperculum with a double denticulated edge. Lateral line sometimes interrupted. Scales large, deciduous.

Small fishes living in the fresh and brackish waters of the Indian and Australian regions.

72. Ambassis Commersonii, Cuv. & Val.

Gunth. Cat. I., p. 223. Bleek. Atl. Ichth. Perc., tab 74, fig. 1.

D. 7. 1/9-10. A. 3/9. L. lat. 30-33. Vert. 9/15.

Height of body twice and a-half in the length (without caudal), second spine of dorsal fin thrice and a-half in the same. Second and third anal spines nearly equal, or third rather longer; lateral line slightly curved. Coloration of body uniform.

Port Darwin.

73. Ambassis agrammus, Gunth.

Ann. and Mag. Nat. Hist., 1867, Vol. XX., p. 57.

D. 7. 1/8. A. 3/8. L. lat. 26-27.

Height of body two-fifths of the length without caudal. Lateral line visible on the foremost scale only. The second dorsal spine is longer than the third, and much longer than the second and third anal spines which are equal, not much shorter than the head, and two-sevenths of the total length (without caudal). Uniform greenish-olive, with a narrow bluish-silvery band along the middle of the tail.

Cape York.

74. Ambassis Agassizii, Gunth.

Ann. and Mag. Nat. Hist., 1867, Vol. XX, p. 57.

D. 6. 1/7. A. 3/8. L. lat. 25.

The height of the body is contained twice and one-third in the total length (without caudal). Lateral line none. The second dorsal spine scarcely longer than the third, much longer than the anal spines, shorter than the head without snout, and less than one-fourth of the total length (without caudal). Body immaculate with a narrow bluish-silvery lateral band.

Clarence River.

75. Ambassis elevatus, *n. sp.*

D. 7. 1/9. A. 3/9. L. lat. 25.

Height of body half the length without caudal. Præorbital and the inferior ridges of the præoperculum densely denticulated, the teeth pointing backwards. Second dorsal spine very long, more than a third of the total length, the second and third anal spines about the same size. The lateral line is indistinct and terminates under the soft dorsal, but there is a very distinct, straight median line ; the pectoral fin reaches as far as the fourth anal ray, the tail is strongly bilobed, the lobes large, pointed and divergent. The colour is reddish, minutely speckled with blackish, more particularly on the fins; the opercles and the median line silvery.

Endeavour River.

Genus PSEUDOAMBASSIS, Casteln.

Like *Ambassis*, but without the procumbent spine in front of the dorsal fin.

Australia.

76. PSEUDOAMBASSIS MACLEAYI, Casteln.

Proc. Linn. Soc, N.S. Wales, Vol. III., p. 43.

Norman River.

77. PSEUDOAMBASSIS ELONGATUS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 44.

Norman River.

78. PSEUDOAMBASSIS PAPUENSIS, All. & Macl.

Ambassis Papuensis, Proc. Linn. Soc. N. S. Wales, Vol. I., p. 266, pl. 5, fig. 4.

South Coast of New Guinea (Chevert Exp.)

79. PSEUDOAMBASSIS CASTELNAUI, *n. sp.*

D. 7. 1/8. A. 3/8. L. lat. 22-24.

Height of body one-third of the length (without caudal). No lateral line, or only faintly shown on a few scales. Second dorsal spine only a little longer than the third, the first very short and curved. The first anal spine short, the others long and nearly equal; the pectorals scarcely reach the anal. Eyes large, a depression on the forehead between them. Colour brownish, fins pale.

Murrumbidgee.

80. PSEUDOAMBASSIS RAMSAYI, *n. sp.*

D. 7. 1/9. A. 3/10-11. L. lat. about 20.

Height twice and one-third in the length without caudal. Third dorsal spine rather longer than the second, the third anal spine rather longer than the second; both stout. Lateral line scarcely traceable. Colour reddish-brown, a good deal mottled with black about the back and with the membrane between the second and third dorsal spine black.

One specimen three inches long, marked Port Jackson in Macl. Mus.

81. PSEUDOAMBASSIS JACKSONIENSIS, *n. sp.*

D. 7. 1/10. A. 3/9. L. lat. about 22.

Height three times and one-third in the total length (without caudal); the third and fourth dorsal spines longest and equal, the third anal longer than the second; a well marked silvery median line; tail long, moderately bilobed. Colour pale yellow with minute specks of black on the back and fins. Average length two inches.

Port Jackson.

Genus EDELIA, Casteln.

Seven branchiostegals. Teeth, all similar, rather large, slender, arched, crowded on each jaw and on the palatine bones; no canines; two dorsals continuous at the base, the first with seven spines; the anal with three; præoperculum smooth; operculum with two spines, scales large and rather adherent; lateral line interrupted.

82. EDELIA VITTATA, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 124.
D. 7. 1/9. A. 3/7. L. lat. 32.

Height of body one-third of the length (without caudal), back convex, upper profile of head straight, mouth oblique, præorbital strongly serrated, præoperculum rounded. Second spine of the dorsal fin longest and more than twice the length of the first. Lateral line interrupted below the soft dorsal; tail long and rather rounded. The colour in the spirit specimen is olive-green, with a broad, straight, longitudinal band of a fine red colour, extending from the posterior part of the operculum, at the height of the eye, to the base of the caudal; below this the body is silvery, each scale being bordered with olive; the belly is pink; the fins like the body olive-green. Length over two inches.

Fresh-waters, interior of Western Australia.

83. EDELIA VIRIDIS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 125.
D. 7. 1/9. A. 3/8. L. lat. 28.

Differs from the last species in being of a higher form, in having the upper profile slightly convex, in having the first dorsal placed more forward, and in having the tail pointed. The colour is dark olive-green with the lower parts lighter. There is in some specimens a black blotch behind the operculum, over the insertion of the pectorals, and in others a somewhat ocellated spot on the base of the caudal fin. The fins are of an obscure yellow. Largest size one inch and a-half long.

Fresh-waters inland from King George's Sound.

Genus ACANTHOPERCA, Casteln.

This genus is fully described by Count Castelnau in the Proc. Linn. Soc. N. S. Wales, Vol. III., p. 44. Except in having the dorsals more continuous it seems not to differ much from the preceding genus.

84. ACANTHOPERCA GULLIVERI, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 45.

Norman River.

Genus NANNOPERCA, Gunth.

Body compressed, oblong, covered with scales of moderate size. Dorsal fins slightly contiguous at the base, the first with seven spines. Three anal spines. Narrow bands of villiform teeth in the jaws on the vomer, and on the palatine bones. *None of the bones of the head serrated.* Six branchiostegals. Pseudobranchiæ. No lateral line.

85. NANNOPERCA AUSTRALIS, Gunth.

Proc. Zool. Soc., 1861, p. 116, pl. 19, fig. 2.

D. 7. 1/8. A. 3/7. V. 1/5. L. lat. 30. L. transv. 12.

Height of body four times and five-sevenths in the total length, the length of the head thrice and two-thirds in the same. Mouth narrow and oblique, the lower jaw projecting. The eye is much wider than the interorbital space. The ridges of the præoperculum are close together and smooth; the second dorsal spine is the longest, and double the length of the first; anal spine strong, the second and third about equal. Caudal fin rounded; the ventrals inserted behind the pectorals, and do not reach the vent. The colour of the dried specimens seems to have been greenish above, each scale having a darker margin. From two to three inches long.

The Murray River.

86. NANNOPERCA RIVERINÆ, *n. sp.*

D. 8/8. A. 3/6. L. lat. about 24. L. transv. 15.

Height of body about a third of the length without caudal fin. Eye rather large, about the length of the snout, but less than the distance between the orbits. Snout and forehead covered with skin, and with muciferous cavities. Mouth slightly oblique; third dorsal spine longest, second anal stronger, but not longer than the third. Some of the scales on the sides marked as in a lateral line. Colour in spirits, a yellowish-brown with the middle of each scale darker.

Murrumbidgee River. Two inches long.

Genus Apogon, Lacep.

Seven branchiostegals. Teeth villiform, no canines, teeth on the palate, tongue smooth. Two dorsal fins, the first with six or seven spines. Anal fin with two spines. Operculum spiniferous; præoperculum with a double serrated ridge. Scales large, deciduous.

Found throughout all the Indian and Australian seas, sometimes in fresh-water.

87. Apogon fasciatus, White.

Gunth. Cat. Fishes, Vol. I., p. 241.

Amia fasciata, Bleek., Atl. Ichthyol. Perc., pl. 48, f. 4.

D. 7. 1/8. A. 2/8. L. lat. 28.

Height nearly half of the length without tail; space between the eyes much smaller than the diameter of the orbit and much channelled; tail slightly emarginate. Colour brownish-red with five longitudinal black bands on each side, the first close to the back, the second from above the eye to the upper margin of the tail, the third along the middle of the side and extending nearly to the extremity of the tail, the fourth from below the eye to the inferior margin of the tail, the fifth along the belly and more or less indistinct; there is also a black bar at the base of the soft dorsal and anal fins.

Port Jackson and Northern Coast. Length five inches.

This is the most common Port Jackson species and is without doubt the true *A. fasciatus*, White, but I doubt its identity with *A. Aroubiensis*, Hombr. and Jacquin, *A. endeka-tænia*, Bleek., and even with the *A. fasciatus*, Gunth., Journ. Mus., Godeff., Fish, Sud. Sea, Heft I., tab. 20 A. B.

88. APOGON COOKII, *n. sp.*

D. 7. 1/8. A. 2/8. L. lat. 35.

Height nearly one-third of length without tail; space between the eyes flat, and nearly equal to the diameter of the orbit. Præoperculum more prominently rounded than in *A. fasciatus*. Colour yellowish, in spirits, with four or five very broad, longitudinal brown bands, placed as in *A. fasciatus*, but terminating in a somewhat round, brown patch at the root of the tail.

Endeavour River and Darnley Island. Length three inches.

89. APOGON VICTORIÆ, Gunth.

Cat. Fishes, Brit. Mus., Vol. I., p. 243.

D. 7. 1/9. A. 2/8. L. lat. 24. L. transv. 2/6-7.

Yellowish-olive (in a dried state) with four darker longitudinal bands on each side; root of the pectoral deep black, pectoral yellow. All the outer edge of the præoperculum denticulated, the inner entire.

Victoria River. Length three inches and nine lines.

90. APOGON QUADRIFASCIATUS, Val.

Gunth. Cat. Fishes I., p. 239. Bleek. Atl. Ichth. Perc., pl. 57, f. 1.

Caudal fin notched. Whitish (in spirits): on each side two parallel, brown, longitudinal bands; fins yellowish; the upper half of the anterior dorsal more or less intense black.

North Australia (Macgillivray).

91. Apogon Guntheri, Casteln.

Proc. Zool. Soc. Melbourne, I., p. 46.

D. 7. 1/9. A. 2/7. L. lat. 26. S. transv. 11-12.

Height two and a-half times in the total length. Colour brownish-pink, without spots or bands. Side of head with a golden tinge, all the scales covered with minute black dots; throat sometimes inflated.

Port Phillip, Tasmania and Port Jackson. Length four inches.

This is probably *A. Novæ Hollandiæ*, Val., a species described long ago, but in a publication which is not accessible to me.

92. Apogon hyalosoma, Bleek.

Gunth. Cat. Fishes I., p. 231.

Amia hyalosoma, Bleek., Atl. Ichth. Perc, pl. 31, fig. 4.

D. 6. 1/8. A. 2/7.

Uniform yellowish, with a black spot at the root of the caudal fin; interspace between the second and third dorsal spines black. Suprascapular, sub and interoperculum entire; the upper maxillary bone reaching to before the posterior half of the eye.

Port Darwin.

93. Apogon Torresiensis, Casteln.

Researches on Fishes of Victoria, p. 9.

D. 6. 1/8. A. 2/7.

Tail furcate, space between the second and third dorsal spines and the end of the second dorsal obscure. General colour brownish-olive, the posterior edge of the body scales rather darker, fins transparent, an obscure blotch on each side of the tail.

Cape York. Length four inches.

I think this may probably be only a variety of *A. hyolosoma.*

94. APOGON TRIMACULATUS, Cuv. & Val.

Gunth. Cat. I., p. 233 Casteln. Res. Fishes of Australia, p. 9.

D. 6. 1/9. A. 2/9.

Brownish-red, with a black blotch under the spinous dorsal, another below the soft dorsal, and a third on the upper part of the tail.

Cape York. Length five and a-half inches.

95. APOGON RUPPELLII, Gunth.

Gunth. Cat. I., p. 236.

D. 7. 1/9. A. 2/9-10. L. lat. 26. L. transv. 2/6.

Reddish, with lighter fins; seven small black spots from the occiput along the back, nine others along and above the lateral line, and two or three dots on the back of the tail; a brownish streak from the eye to the angle of the præoperculum.

Port Darwin. Length four inches.

96. APOGON OPERCULARIS, Macl.

Proc. Linn. Soc. N. S. Wales, Vol. II., p. 347, pl. 8, fig. 1.

Port Darwin.

97. APOGON GUTTULATUS, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 267, pl. 5, fig. 1.

Darnley Island.

98. APOGON ATERRIMUS, Gunth.

Ann. and Mag. Nat. Hist., 3rd series, Vol. XX. p. 58.

D. 7. 1/9. A. 2/8. L. lat 25.

The height of the body is one-third of the total length, without the caudal fin. Entirely uniform deep black.

Cape York.

Genus APOGONICHTHYS, Bleek.

Differs from *Apogon* only in having the double ridge of the præoperculum smooth.

99. APOGONICHTHYS APRION, Richards.

Gunth. Cat. Fish I., p. 247.

Caudal fin rounded. First dorsal with six spines, a small cluster of teeth on the tongue. L. lat. 40. L. transv. 5/13. Brownish, with about eight blackish cross-bands on the back; top of the first dorsal deep black.

Port Essington.

100. APOGONICHTHYS POLYSTIGMA, Bleek.

Gunth. Cat. Fish I., p. 246.

Brownish: fins red; operculum with a large blue, lighter edged spot; two oblique brown bands from the eye to the præoperculum, each scale with a blackish spot at the base. L. lat. 28. L. transv. 9-10.

Port Darwin.

101. APOGONICHTHYS GILLII, Steind.

Apogon Gillii, Gunth., Ann. Nat. Hist. 1876, p. 392.

Mionurus lunatus, Krefft, Proc. Zool. Soc. 1867, p. 942.

D. 6. 1/9. A. 2/8-9. L. lat. 27. L. transv. 3/11.

Height of body twice and two-thirds in the length (without caudal); the length of the head twice and a-half. Upper profile of snout concave; lower jaw prominent. Caudal fin rounded. Brownish, irregularly mottled with darker, a pair of dark spots at the root of the caudal.

Rockhampton (Damel); Cox's River (Krefft).

102. APOGONICHTHYS ADSPERSUS, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. II., p. 226.

Rockhampton.

103. APOGONICHTHYS DARNLEYENSIS, All. & Macl.

Proc. Linn. Soc. N. S. Wales Vol. I., p. 268, pl. 5, fig. 3.
Darnley Island.

104. APOGONICHTHYS MARMORATUS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 268, pl. 5, fig. 2.
Cape Grenville.

105. APOGONICHTHYS ROSEOBRUNNEUS, *n. sp.*

D. 6. 1/9. A. 2/8. L. lat. 24. L. transv. 3/10.

Height of body and length of head the same and nearly one-third of the total length. Mouth large; eye rather small, a little less than the space between the orbits. A prominent ridge on the suture of the sub and interoperculum. Colour uniform reddish-brown, the first dorsal and ventral clouded with brown.

One specimen four inches long in the Macleay Museum, labelled "from River in Northern Queensland."

Genus CHEILODIPTERUS, Lacep.

Seven branchiostegals. Villiform teeth in the jaws with the addition of canines; teeth on the palatine bones. Two dorsal fins, the first with six spines; anal fin with two. Præoperculum generally with double serrature. Scales large, deciduous.

Red Sea; Indian Ocean; Pacific.

106. CHEILODIPTERUS QUINQUELINEATUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 248. Bleek. Atl. Ichth. Perc., pl. 48, f. 2.

Caudal fin notched. Body with ten black longitudinal bands—four on each side; one along the middle of the back, and one on the belly, a black spot on the tail with yellow centre; the first dorsal fin black in front.

Cape York. (Castelnau).

Genus GULLIVERIA, Casteln.

Teeth numerous, short, conical, swollen at the base, no canines, an angular line of teeth on the palate, tongue smooth; præoperculum not denticulated; two dorsal fins, the first with six spines, the second with one long spine, anal with two spines. General form oval, compressed, scales rather large; mouth rather oblique.

107. GULLIVERIA FUSCA, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. III., p. 45.

Norman River.

108. GULLIVERIA FASCIATA, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. III., p. 46.

Norman River.

Genus AIDA, Casteln.

Teeth minute, in a single row, two feeble canines in the upper jaw, a transverse row on the palate; mouth very oblique, opercles unarmed, body very compressed, scales large, no lateral line; two dorsal fins, the first with five spines, the last four elongate; the second with one spine and thirteen rays, increasing in length backwards; tail bilobed. Anal fin with two spines and seventeen rays, shaped like the soft dorsal. Ventral fins inserted behind the pectorals and united at their base.

109. AIDA INORNATA, Casteln.

Researches on Fishes of Australia, p. 10.

Height of body three times in the length (without caudal); head nearly three times and a-half in the same; eye equal to the snout and three times and one-third in the length of the head; L. lat. 32. General colour silvery, with a greenish tinge; head yellow; dorsal, caudal, and anal fins edged with black.

Gulf of Carpentaria. One specimen two and a-half inches long.

Genus VINCENTIA, Casteln.

Differs from *Agogon* in having no teeth on the palate, and the scales more adherent.

110. VINCENTIA WATERHOUSEI, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 60.

D. 7. 1/7. A. 2/7. L. lat. 24. L. transv. 12.

Height of body over three times in the total length, head three times and a-quarter in the same; orbit three times in the length of the head. Head very large; lower jaw shorter than the upper, teeth minute, numerous, villiform; body compressed; caudal fin rounded. Colour reddish: the top of the head and tips of the fins, except the pectorals, have a purplish black tinge; the points of the ventrals are black; there are also some irregular purple spots on the body.

St. Vincent's Gulf, South Australia. Length four inches.

Group *Grystina.*

Genus ARRIPIS, Jenyns.

Seven branchiostegals. Teeth villiform, without canines; teeth on the palatine bones, tongue smooth. One dorsal fin, with nine slender spines, anal with three. Operculum spiniferous, præoperculum denticulated. Scales moderate.

Australian Seas.

111. ARRIPIS GEORGIANUS, Cuv. & Val.

Richards, Voy. Erebus and Terror, p. 117, pl. 54, f. 3—6.

Gunth. Cat. Fish I., p. 253.

D. 9/14. A. 3/10. L. lat. 55. Cæc. pylor. 17.

Height of body four times and a-half in the total length, and length of head nearly four times in the same. Diameter of eye one-third of length of head; præoperculum finely serrated, operculum with two spines. The fourth dorsal spine longest. Greenish or yellowish olive, in spirits, with a brownish spot in the middle of each scale.

Western Australia, South Australia, Victoria, and ? New South Wales.

112. ARRIPIS SALAR, Richards.

Voy. Erebus and Terror, p. 29, pl. 20, f. 4-6. Gunth. Cat. Fish I., p. 253.

Centropistes truttaceus, Cuv. & Val.

The Salmon of Sydney and Melbourne Fishermen.

D. 9/16-17. A. 3/10. L. lat. 48-52. L. transv. 6/12. Cæc. pylor. 50. Vert. 10/15.

Height of body one-fourth of the total length and equal to the length of the head; the diameter of the eye is one-fifth of the latter. Præoperculum serrated behind and beneath; sub and interoperculum with scales. The fourth dorsal spine longest; the third of the anal rather longer the second. Back with darker spots.

East and South Coasts.

Genus ODONTONECTES, Gunth.

Six branchiostegals. Teeth villiform on the jaws, vomer, and palatine bones, an outer series of larger teeth on the jaws; canines very small. One dorsal fin with ten spines, the basal half scaly; anal fin with three spines. Præoperculum very slightly serrated at the angle. Scales moderate without apparent serrature. Mouth oblique, the lower jaw longest. Eye moderate. Pyloric appendages in small number; air bladder with two narrow processes in front to the base of the skull.

East Indian Seas.

113. ODONTONECTES ERYTHROGASTER, Cuv. & Val.

Gunth. Cat. Fishes, Vol. I., p. 265.

D. 10/15. A. 3/11. L. lat. 53. L. transv. 7/13. Vert. 10/4. Cæc. pylor. 5.

Height three times and a-half in the total length; the length of the head four-times; snout equal to the diameter of the eye, and one-fourth of the length of the head. The maxillary reaches beyond the vertical from the anterior margin of the eye; præoperculum rounded at the angle. The spines of the fins slender and flexible, the fourth of the dorsal longest. Tail deeply forked, the second and third anal spines nearly equal. Above bluish-green; belly rose-coloured.

Fitzroy Island (Chevert Exp.)

Genus OLIGORUS, Gunther.

Seven branchiostegals. All the teeth villiform without canines, teeth on the palatine bones, tongue smooth. One dorsal fin with eleven spines, the anal with three. Operculum with one point, præoperculum with a single smooth or obtusely denticulated ridge. Scales small. The number of pyloric appendages small.

Australian Rivers.

114. OLIGORUS MACQUARIENSIS, Cuv. & Val.

Gunth. Cat. Fishes, Vol. I., p. 251.

The *Cod* of the Colonists. *Kookoobul* of the Murrumbidgee natives.

D. 11/14-16. A. 3/12. Cæc. pylor. 3.

The height of the body is four times and three-quarters in the total length, the length of the head three and a-half; the diameter of the eye is one-seventh of the latter. Præoperculum, suprascapula and præorbital entire; pectoral and ventral fins short, caudal rounded, the fifth dorsal spine longest, the second and third of the anal nearly equal. Colour greenish-brown, with numerous small dark green spots; belly whitish.

All the rivers of the Murray system, and some of the northern coast rivers of New South Wales.

115. Oligorus Mitchelli, Casteln.

Proc. Zool. Soc. Victoria, Vol. II., p. 150.

Differs from *O. macquariensis* in having the head much broader, the eye considerably larger, it being one-sixth of the length of the head, the upper jaw longer than the lower, the operculum more rounded and the caudal fin a little longer. The height of the body also is three times and a-third in the length without the caudal, instead of four times and a-half as in the other species, and the upper profile is more convex.

In all the Western rivers.

116. Oligorus terræ-reginæ, Rams.

Proc. Linn. Soc. N. S. Wales, Vol. V., p. 93, pl. 9.

One specimen in the Australian Museum from Brisbane, measuring six feet in length and weighing over one cwt.

Genus Homalogrystes, All. & Macl.

Body oblong. Mouth large. Lower jaw longer than the upper. A broad band of acute recurved, somewhat conical teeth in both jaws; a band of similar teeth on the vomer and palatine bones. Two canines close together in front of the upper jaw; tongue smooth. Six branchiostegals. Operculum armed. Præoperculum bluntly serrated and emarginate on the posterior edge. Eye moderate. Scales small. One dorsal fin with eleven spines. Caudal fin rounded.

117. HOMALOGRYSTES GUNTHERI, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 269.

Torres' Straits, near Katow.

Genus CTENOLATES, Gunth.

Seven branchiostegals, pseudobranchiæ, teeth villiform in bands, teeth on the palatine and vomer, tongue smooth. The spinous dorsal is continuous with the soft, and composed of ten spines. Præoperculum finely serrated behind with small denticulations on the lower limb; præorbital serrated. Scales small, strongly ctenoid.

Australian rivers.

118. CTENOLATES AMBIGUUS, Richards.

Datnia ambigua, Rich., Voy. Erebus and Terror, p. 25, pl. 19.

Dules ambiguus, Gunth., Cat. I., p. 270.

Dules auratus, Casteln., Proc. Zool. Soc., Vict., I., p. 55.

Ctenolates macquariensis, Gunth., Proc. Zool. Soc. 1871, p. 390, p. 33.

The "*Golden Perch*" and "*Yellow belly*" of the Colonists. "*Kaakaalain*" of the Murrumbidgee natives.

D. 10/11. A. 3/8. L. lat. 76-81. L. transv. 13/28.

Height two-fifths of the length without caudal; length of head one-third. Upper profile very convex above the nape, and deeply concave on the occiput; the maxillary reaches to below the middle of the eye. Mandible prominent. The diameter of the eye is one half of the length of the snout and one-fourth of the post-orbital portion of the head. Scales on the cheek numerous, only half the size of those on the operculum. The denticulations of the lower præopercular limb are small, irregular and directed forwards. Spines of fins strong, the last dorsals much shorter than the rays. Caudal and pectorals rounded. First ventral ray elongated. Colour greenish on the back with the sides and belly golden yellow, the vertical fins are faintly marked or bordered with black.

All the rivers of the Murray system.

I have no doubt that these are all one and the same species, though the variations in the descriptions are sufficient to excite some uncertainty. The genus *Ctenolates* has been very properly separated by Dr. Gunther, (Proc. Zool. Soc. 1871, p. 320.) from *Dules.*

119. CTENOLATES CHRISTYI, Casteln.

Dules Christyi, Casteln., Proc. Zool. Soc., Vict., I., p. 57.

D. 10/11. A. 3/8. L. lat. 52. L. transv. 8/18.

Height three times and one-fourth in the total length; head four times and one-sixth in the same; orbit four times and a-half in the head, the latter cavernous. Upper profile much elevated, almost gibbous behind the eye. Body highest at the base of the pectorals. The teeth are numerous, but seem to be wanting on the palatine bones. Coracoid much denticulated. Soft dorsal and anal fins scaly for one-third of their height. Colour brownish purple above, and white below.

One specimen fourteen inches long from the Edwards River, near Deniliquin.

120. CTENOLATES FLAVESCENS, Gunth.

Dules flavescens, Gunth., Res. Fishes of Victoria, p. 10.

D. 10/10. A. 3/9. L. lat. 89.

Form elongate, height of body three times and two-thirds in the length, and head three times, without the caudal fin. Præorbital entire. Præoperculum finely serrated behind, and bilobed beneath with strong obtuse spines. Operculum covered with scales much larger than those on the cheek, and armed with a long, flat spine. Scales larger below the lateral line than above.

Dorsal and anal fins in great part covered with scales. Colour ochreous golden-yellow, back slaty-grey, belly white, mouth reddish, ventrals white and eye silvery.

One specimen nineteen inches long, from the Murray.

Genus MURRAYIA, Casteln.

A genus placed by Count Castelnau between *Dules* and *Therapon* and characterized as having eleven dorsal spines, operculum denticulated in all its length, a line of small teeth on the palatine bones, the caudal fin rounded, scales minutely serrated and the head cavernous.

Australian rivers.

121. MURRAYIA GUNTHERI, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 61.

D. 11/12. A. 3/8. P. 16. C. 16. L. lat. 50. L. transv. 10/18.

Height three and one half times in the length; head three times and two-thirds in the same; eye four times and a-half in the length of the head. Upper profile very convex, the back being elevated and gibbous behind the head; upper surface of head naked; præorbital very finely denticulated; præoperculum slightly emarginate behind, and finely serrated, the serrations irregular and larger on the rounded angle and on the lower limb. Operculum with two broad flat serrated spines; superscapula and coracoid also serrated. The fifth dorsal spine is the longest; the soft dorsal is scaly; the second anal spine longest; the first ray of the ventrals prolonged into a filament. The general colour is purple, becoming redder towards the belly, the scales bordered with a dark tinge. The fins are purplish, the ventrals pink with the external third black: pectoral yellow. Eye bronze.

From the Murray River, average length fourteen inches.

122. MURRAYIA CYPRINOIDES, Casteln.

Prc. Zool. Soc., Victoria, Vol. I., p. 62.

D. 11/13. A. 3/9. L. lat. 52. L. transv. $10\frac{1}{2}/18\frac{1}{2}$.

Height of body three times and one-third in the total length; head three and a-half in the same, eye five and a-half in the length of the head. Form more elevated and gibbous than in *Guntheri*. The first ventral ray prolonged into a bifid filament. Colour, above green with the border of the scales darker, beneath yellow; the lateral line dark, sides of the head purple, pectorals pink on the upper portion, yellow on the lower. The dorsal, caudal and anal fins purple; the ventrals pink with the spine white.

Murray River. Length ten or twelve inches.

123. MURRAYIA BRAMOIDES, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 63.

D. 11/12. A. 3/8. C. 17. P. 16. L. lat. 52. L. transv. 9/16.

Height four times in the total length, head three times and two-thirds; orbit three times and eight-tenths in length of head. Head very cavernous; præoperculum straight, and finely serrulated on the posterior limb, obtusely denticulated on the angle, and on the inferior limb, with the denticulations pointing forwards. The operculum is thinly serrated and has two angles, the lower of which is a sort of flap divided into five flat spines; the superscapula is like a segment of a circular saw; the fifth dorsal spine is the longest; anal spine slender; the first ray of the ventrals elongate. Colour dirty yellow, each scale with an obscure border, head brown, lower parts reddish; vertical fins dark with the spines purple; pectorals and ventrals pink. Eye yellow.

Murray River, rare; about twelve inches in length.

124. MURRAYIA RIVERINA, Krefft.

Dules riverinus, Krefft, Proc. Zool. Soc., 1867, p. 943.

D. 11/11. A. 3/9. P. 15. L. lat. 58 to 60.

Height of body one-third of length, without the caudal fin; the diameter of the eye is equal to the length of the snout, as long as the space between the eyes, and nearly one-fourth of the length of the head. Operculum with two spines, the lower one with two points. Tail truncate. Colour silvery on the sides, the lateral line dividing the silvery part from the brown of the back, the scales are all dotted with black spots, as are the fins, the first ray of the ventral is produced into a filament as long as the head.

Murray River and its tributaries.

Genus RIVERINA, Casteln.

Resembles *Murrayia*, but has twelve spines in the dorsal fin, and is without teeth on the palatine bones.

125. RIVERINA FLUVIATILIS, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 64.

D. 12/11. A. 3/8. C. 18. P. 16. L. lat. 46. L. transv. 8/16.

Height of body three times and two-thirds in the total length, head three times and six-tenths in the same. Form and colour the same as *Murrayia bramoides*, but the head of a more fleshy colour. The first spine of the operculum is bifid, the second tridenticulated; the fifth dorsal spine the longest, the twelfth longer than the eleventh, the second anal spine is very thick and blunt but not longer than the third; the first ray of the pectorals elongate.

Murray River; one specimen.

Genus DULES, Cuv. & Val.

Six branchiostegals. All the teeth villiform, without canines, teeth on the palatine bones. One dorsal fin, with ten spines, anal with three. Operculum with two or three points, præoperculum serrated; chin not very prominent; eyes moderate.

Seas and rivers of tropical regions.

126. DULES HASWELLII, *n. sp.*

D. 10/11. A. 3/10. L. lat. 42. L. transv. 5/9.

Height of body one-third of total length, the length of the head nearly one-fourth. Eye large, its diameter being, about equal to its distance from the point of the muzzle, three times the height of the præorbital bone, and about half the width of the interorbital space, which is rather flat and concave in the profile; the mouth is slightly oblique, and the maxillary extends to rather beyond the vertical from the posterior margin of the orbit. The præoperculum is crenulated on the posterior edge· The scales are ctenoid, those on the opercles as large as those on the body. The fifth and sixth spines of the dorsal fin longest, the eleventh nearly as long, but much shorter than the anterior rays, the anal spines are strong and of nearly equal thickness, but increase in length backwards, the third much shorter than the first rays; the caudal fin is considerably emarginated; pectorals short. Colour silvery, very dark towards the back; many of the scales show dark spots, and there are distinct black spots on the opercles and near the anal fin. The vertical fins are blackish with the extreme tips whitish.

Fresh-waters Rockingham Bay. Length fourteen inches.

Genus MACQUARIA, Cuv. & Val.

Five branchiostegals. No teeth in the jaws or on the palate. Spines strong, eleven in the dorsal and three in the anal fins. Præoperculum serrated. Scales moderate.

127. MACQUARIA AUSTRALASICA, Cuv. & Val.

Gunth. Cat. Fishes I., p. 286. Less. Voy. Coqr., Zool. II., p. 194, pl. 14, f. 1.

D. 11/11. A. 3/8. L. lat. 65-66. Cæc. pylor. 8.

Externally very similar to *Ctenolates ambiguus*. Snout scaleless. The fourth and fifth dorsal spines longest, the second of the anal much longer and stronger than the third. Uniform brownish.

Macquarie River.

Genus THERAPON, Cuv.

Six branchiostegals. Eye of moderate size. Teeth, villiform in both jaws, deciduous on the vomer and palatine bones. Operculum spiniferous, præoperculum serrated. Dorsal fin more or less notched with twelve or sometimes thirteen spines; anal with three. Scales moderate. Air bladder with two divisions—an anterior and posterior, separated by a contraction. Cæca pylorica in moderate number.

Indian and Australian seas and rivers.

128. THERAPON THERAPS, Cuv. & Val.

D. 12/10. A. 3/8. L. lat. 55. Vert. 10/15.

Height of body three times and a-half in the total length, the head four times; snout once and a-third in the space between the eyes. Præoperculum rounded, serrated, with moderate teeth at the angle, operculum with two spines, the lower of which is elongate and strong. Greenish-grey, with three straight, brown longitudinal bands, the lowest of which extends from the head to the tail; the spinous portion of the dorsal fin blackish between the third and seventh spines; two or three blackish bands obliquely crossing each lobe of the tail.

Port Darwin and North-east Coast of Queensland.

This species which has a very wide range is figured in Bleeker's Atlas of the Percidæ, pl. 43, f. 1, with four longitudinal bands, and with a brown tip to the second dorsal fin.

129. THERAPON SERVUS, Bl.

Gunth. Cat. Fishes, Vol. I., p. 278.

D. 12/10. A. 3/8. L. lat. 80. Vert. 10/15.

The height of the body is nearly equal to the length of the head, and is contained three times and three-quarters in the total length. The snout is a little longer than the space between the eyes. Præoperculum rounded, serrated, with strong spinous teeth at the angle; operculum with two spines, the lower elongate and strong. Greenish-grey, with three curved, brown, longitudinal bands (the convexity towards the belly); the spinous portion of the dorsal fin blackish between the fourth and seventh spines; two blackish bands obliquely crossing each lobe of the tail.

North and North-east Coasts of Australia.

130. THERAPON CAUDOVITTATUS, Richards.

Gunth. Cat. Fishes, Vol. I., p. 284.

Datnia caudavittata, Rich., Voy. Ereb. & Terr., p. 24, pl. 18, f. 3-5.

D. 13/10. A. 3/8. L. lat. 46.

Snout rather longer than the diameter of the eye; præoperculum rounded, finely and equally denticulated. Opercular spines flat and rather short. Dorsal fin scarcely notched, the last spine as long as the first rays, the fourth, fifth and sixth longest, half as high as the body and slender. The second anal spine rather stronger than the third. Spotted with greyish-brown, each lobe of the caudal fin with a broad deep-black band.

Western, Northern, and North-eastern Coasts.

131. THERAPON TRIVITTATUS, Buch.

Gunth. Cat. Fishes, I., p. 280. Bleek. Atl. Ichth., pl. 62, f. 2.

D. 12/10. A. 3/9. L lat. 90-100. Cæc. pyl. 7. Vert. 10/15.

The height of the body is about one-fourth of the total length, the length of the head about the same; the length of the snout is a little more than the space between the eyes. Præoperculum serrated, with very strong teeth at the angle; operculum with two spines, the lower elongate and strong. Greenish-grey, with three straight, brown, longitudinal bands, the inferior extending from the eye to the tail; the spinous dorsal fin blackish between the third and eighth spines; two oblique blackish bands on each lobe of the tail.

Torres Straits.

132. THERAPON CUVIERI, Bleek.

Gunth. Cat. Fishes I., p. 282. Bleek. Atl. Ichth. Perc., pl. 37, f. 2.

D. 12/10. A. 3/10. L. lat. 66. L. transv. 12/23. Cæc. pylor. 6.

Height of body three and a-half times in the total length; length of head four and a-half times; the diameter of the eye nearly five times in the length of the head, and one and three-quarters in that of the snout. Præoperculum finely and equally serrated; opercular spines feeble. Dorsal fin scarcely notched, with slender spines, the fifth and sixth longest; anal spines feeble. Caudal very slightly emarginate. Four, five or six longitudinal bands. Fins immaculate.

Port Jackson; East and North Coasts.

133. THERAPON PERCOIDES, Gunth.

Ann. and Mag. Nat. Hist., 3rd Series, Vol. XIV., p. 374.

D. 13/9. A. 3/8. L. lat. 39. L. transv. 7/13.

Height of body twice and a-half in the length, without caudal; the length of the head twice and one-third. Upper surface of head rather flat and scaleless; snout equal in length to the diameter of the eye, and a little longer than the width of the interorbital space. Mouth small, the maxillary scarcely reaching to below the anterior margin of the orbit. Præorbital narrowed posteriorly and indistinctly serrated, præoperculum equally serrated and obtusely rounded; operculum with two points, the lower spinous and rather prominent. Back greenish, shining silvery, passing into pure white below: five black cross-bands descend from the back towards the belly—the first from before the dorsal fin, the second from the fifth or sixth dorsal spine, the third from the last dorsal spine, the fourth from the posterior half of the soft dorsal, and the fifth across the tail. Vertical fins marbled with black. Infraorbital bones with a silvery band.

Rivers of Northern Queensland.

134. THERAPON FASCIATUS, Casteln.

Researches Fishes of Australia, p. 11.

D. 13/10. A. 3/7.

Height one-third of the total length, head one-fourth; snout less than the diameter of eye; a strong spine on the operculum; præoperculum with very strong spines directed upwards on its posterior edge. Colour slaty grey above, whitish below with transverse brown bands as in *T. percoides*, some faint transverse bands on the tail.

Swan River; ? Norman River.

135. THERAPON TERRÆ-REGINÆ, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. II., p. 227.

Rivers of Northern Queensland.

136. THERAPON HILLII, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. II., p. 226.

Upper Dawson River.

137. THERAPON ELLIPTICUS, Rich.

Gunth. Cat. Fishes I., p. 276.

Datnia elliptica, Rich. Fish. Ereb. and Ter., p. 118, pl. 52. f. 4—8.

D. 12/13-14. A. 3/8. L. lat. 85. L. tr. 17/31.

The height of the body is thrice and two-thirds in the total length; the length of the head is four times and one-third; snout moderately pointed, præoperculum serrated behind and below, the angle scaleless; præorbital serrated; two opercular spines, the lower is the broader and longer. Dorsal fin nearly even; caudal fin emarginate. The colour is silvery, with occasional black spots, a longitudinal band of the same colour below the eye; caudal, anal, and dorsal fins spotted. Pectoral with obscure transverse lines. The form is more elongate than in *Therapon Richardsonii*, with the back less convex and the head more so.

Rivers of Western Australia.

138. THERAPON RICHARDSONII, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 60.

"*Silver Perch*" of the Colonists, "*Kooberry*" of the Murrumbidgee natives.

D. 12/11-12. A. 3/8. C. 17. P. 16. L. lat. 65. L. tr. 17-25.

Height of body three times and eight-tenths in the total length, head four times and two-thirds in the same; the eye four times and one-seventh in the length of the head. The upper profile of the body strongly and equally convex, the lower almost straight; præorbital very strongly serrated; præoperculum rounded with long spines behind and shorter ones below; coracoid strongly serrated; operculum with two spines, the inferior strongest; dorsal fin received into a groove, the fifth spine the longest; anal spines very strong, the second most so. Caudal fin slightly emarginate. Colour greyish-blue, beneath whitish, sides shaded with yellow, each scale bordered with black; lips rosy; eye yellow; soft dorsal fin black on the upper part; ventrals white with the rays rosy; pectorals black on terminal half.

Found in all the rivers of the Murray system.

139. THERAPON NIGER, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 59.

D. 12/12. A. 3/8. C. 17. P. 15. L. lat. 89. L. trans. 14/28.

Height of the body three times and a-half in the length; head four times and two-thirds in the same; eye four times and one-third in the length of the head. Body convex above, less so beneath; præorbital strongly denticulated; præoperculum a little emarginate behind, and armed with strong spines, these spines longest at the angle which is rounded and much smaller on the lower limb. Operculum terminated by two bunches of flat spines, the first cf two, the second of six spines; the superscapula and coracoid are very strongly denticulated. The dorsal fin received into a groove on the back, the spines strong; the three first the shortest; the membranes of the soft dorsal scaly; caudal fin emarginate and scaly; anal spines large and striated; ventral spine strong, striated and longer than half the length of the fin. The back is grey, but appears dark on account of all the scales having a rather broad, black margin; beneath the colour is yellowish-white; fins grey; the posterior part of the caudal black.

From the Murray River; rarely seen. Length sixteen inches.

140. THERAPON UNICOLOR, Gunth.

Gunth. Cat. Fishes I., p. 277.

D. 12/10. A. 3/8. L. lat. 50. L. transv. 9/20.

Height of body four times in the total length, the length of the head four times and a-half; the space beteen the eyes is greater than their diameter, and the snout is still longer. Præoperculum rounded, finely serrated; præorbital and coracoid indistinctly denticulated. Operculum with two spines, the lower slightly pointed. Spines of the dorsal fin feeble, the sixth longest and three times and three-quarters in the length of the head.

Caudal truncated with rounded angles. Cheeks with small scales forming many series. Greyish, each scale with darker margin.

Gwydir River, Darling Downs, &c.

141. THERAPON TRUTTACEUS, *n. sp.*

D. 12/10. A. 3/8. L. lat. 45. L. transv. 10/18.

Height of body one-third of the length without caudal fin; space between the eyes flat, more than twice the diameter of the eye, and rather more than the length of the snout from the eye. The lips thick, the cleft of the mouth oblique and reaching to the vertical from the anterior margin of the eye. Præoperculum regularly rounded and finely denticulated, operculum with one spine, coracoid denticulated with three or four spine-like teeth at the lower angle; the first dorsal spine less than half the length of the second, the fourth the longest; the fifth and sixth nearly as long; the second and third anal spines equal. Caudal fin somewhat emarginate. Coloration dark above, yellow beneath; all the scales except on the belly are more or less tinged and spotted with a steel blue tint; all the fins except the ventrals are of a dingy blackish colour.

Endeavour River.

142. THERAPON NIGRIPINNIS, *n. sp.*

D. 12/9. A. 3/7. L. lat. 52. L. transv. 9/18.

Height of body one-third of the total length; length of head one-fourth of the same. Eye large, the diameter rather more than the length of the snout, but less than the space between the orbits. Top and back of the head scaleless, rather convex, and much grooved and convoluted; præorbital rounded and obsoletely dentated at the posterior angle; cheek with six series of small scales: præoperculum without scales on the edge which is armed with closely set acute teeth, largest at the angle, and pointing backward on the lower limb; operculum with two spines, the lower long, strong and acute. The spines of the dorsal fin strong, the fifth longest; the spine of the soft dorsal more than twice the length of the preceding one; the soft dorsal and anal fins lower than the spinous dorsal, the third anal spine the longest; caudal fin deeply emarginate, the lobes pointed; pectorals small, shorter than the ventrals. Colour silvery, each scale with a yellow or pearly centre.. The top of the head and all the fins blackish, excepting the spinous dorsal, which seems to have been of a lighter colour, with a large black blotch from the third to the seventh spine.

Rockingham Bay. One specimen eight inches long.

143. THERAPON LONGULUS, *n. sp.*

D. 12/10. A. 3/7. L. lat. 48.

The height of the body is one-fourth of the total length, the length of the head nearly the same. The eyes are about the diameter of the orbit apart, the interspace flat and naked; the length of the snout is about the same. The teeth in the external row in both jaws are strong, regular, and a little curved. The præorbital is dentated behind over the maxillary, the præoperculum is strongly and regularly dentated on the posterior margin the denticulations becoming smaller below the angle; the lower point of the operculum is divided into two or three strong spines; the coracoid is large, free, and strongly denticulated. The dorsal spines are rather slender; the second and third anal spines are about equal; the tail is subtruncate. The coloration seems to have been uniform, in spirits the specimens present a dingy grey appearance all over. Length six inches.

Fresh-waters inland from Port Darwin.

Genus HELOTES, Cuv.

Differs from *Therapon* only in having the teeth lobed on each side.

144. HELOTES SEXLINEATUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 285.

D. 12/10. A. 3/10. L. lat. 110. L. transv. 35. Cæc. pylor. 15. Vert. 10/15.

The height of the body equals the length of the head, and is four and a-half times in the total. Teeth distinctly lobed. Operculum with two short spines, the lower rather prominent; præoperculum rounded, denticulated; the fifth and sixth dorsal spine longest. Six blackish-brown longitudinal bands on each side.

North and East Coasts. Port Darwin.

145. HELOTES OCTOLINEATUS, Jenyns.

Gunth. Cat. I., p. 285. Voy. "Beagle," p. 18.

D. 12/9. A. 3/7.

The height of the body is equal to the length of the head and is four and a-half times in the total length; jaws equal. Teeth distinctly three-pointed. Operculum with two spines—the lower one prominent. Light blackish-brown longitudinal bands on each side.

King George's Sound. West Australia.

Group *Pristipomina.*

Genus AGENOR, Casteln.

Body high, compressed. Teeth villiform in the jaws, a series of acute conical teeth on the vomer and palatines; no molars; cheeks and opercles scaly. Vertical fins in great part covered with scales; dorsal fin not notched, of ten spines. Scales rather small. Australia.

146. AGENOR MODESTUS, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. III., p. 371.

Port Jackson.

Genus Pristipoma, Cuv.

Form of body oblong, compressed. Eye moderate. Cleft of mouth horizontal, not very wide, a central groove below the chin. One dorsal with eleven to fourteen spines; anal fin with three; vertical fins not scaly or on the basal portions only. Villiform teeth in the jaws without canines; no teeth on the palate. Seven branchiostegals. Præoperculum serrated; operculum with very indistinct points. Scales moderate, ctenoid. Pseudobranchiæ. Air-bladder simple; pyloric appendages in small number.

All the temperate and tropical seas of the world.

147. Pristipoma hasta, Bl.

Gunth. Cat. Fishes I., p. 289.

D. 12/14. A. 3/7-8. L. lat. 47. L. transv. 6/10. Cæc. pyl. 6.

Height three to three and a-half in the total length, head about equal to the height; snout longer than the width of the eye. Jaws equal, the maxillary reaches to below the anterior margin of the orbit. Præoperculum emarginate behind, its angle rounded, produced and denticulated. The fourth dorsal spine longest, and more than half the length of the head; a deep notch between the spinous and soft portion. Caudal fin truncate; the second anal spine very strong; pectorals pointed, elongate. Back and upper parts of the sides with brown spots, more or less regularly arranged, sometimes forming longitudinal series, sometimes cross-bars. The dorsal fin with two or three series of round, brown spots.

Torres Straits. South Coast of New Guinea.

148. Pristipoma maculatum, Bl.

Gunth. Cat. Fishes I., p. 293. Bleek. Atl. Ichth. Perc., pl. 30, f. 2.

D. 12/13-14. A. 3/7. L. lat. 47.

The proportions are the same as in *P. hasta*, but the snout is not longer than the eye. The fins also and armature of the opercles are alike in the two species. There is a large black cross-band before the dorsal fin, and six large blotches on each side of the back, forming either two longitudinal rows or three cross-bands ; the spinous dorsal is blackish, with a series of white spots along the base; the soft dorsal has two series of brown spots.

Torres Straits (Voy. of the "Rattlesnake.")

Genus DIAGRAMMA, Cuv.

Body compressed, oblong, with the upper profile of the head parabolic. Mouth small, horizontal. Eye moderate. Præoperculum serrated ; suborbitals without spines. Six or seven branchiostegals. No canine teeth. Four or six pores under the mandibles, but no larger groove. One dorsal fin with nine to fourteen spines ; anal with three. Scales rather small. Swim-bladder simple ; pyloric appendages in small number.

In all temperate and tropical seas.

149. DIAGRAMMA AFFINE, Gunth.

Cat. Fishes I., p. 319, pl. 19. fig. A.

D. 14/16. A. 3/7. L. lat. 45. L. transv. 9/16.

Height of body two and a-half times in the total length, length of head three times and two-fifths ; the distance between the dorsal and caudal fins is less than the height of the tail below the end of the dorsal. Dorsal fin notched, with strong spines, the fourth the longest ; the second anal spine much longer and stronger than the third. Caudal fin slightly convex. Uniform brownish, the dorsal, anal, and ventral fins black.

North-west Australia.

150. DIAGRAMMA CRASSILABRE, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 271, pl. 5, f. 5.

South coast of New Guinea.

151. Diagramma polytænia, Bleek.

Gunth. Cat. Fishes I., p. 332.

B. 6. D. 12/22. A. 3/7. L. lat. 100.

Height of body three and a-half times in the total length, the length of the head four and one-fifth times. The diameter of the eye is three and two-third times in the length of the head; the third, fourth, and fifth dorsal spines longest—one-third the height of the body. Caudal truncate; the second anal spine longer than the third. Yellow with nine bluish-white longitudinal bands, edged with black; the four upper ones terminating at the base of the dorsal, the four next at the caudal; the ninth near the anus.

Port Essington.

152. Diagramma multivittatum, Macl.

Proc. Linn. Soc. N. S. Wales, Vol. II., p. 349, pl. 7, fig. 2.

Port Darwin.

153, Diagramma reticulatum, Gunth.

Cat. Fishes I., p. 334.

D. 13/21-22. A. 3/7. L. lat. 85. L. transv. 13/25.

The height of the body is three and a-half times in the total length, the length of the head four times. Caudal fin truncate; second anal spine stronger but scarcely longer than the third. Brownish-grey (in a dried state), reticulated with darker waved lines; three longitudinal bands on the opercles.

Cape York.

154. Diagramma nitidum, Gunth.

Cat. Fishes I., p. 335, pl. 19, fig. b.

D. 12/20. A. 3/7. L. lat. 95. L. trans. 20/25.

Height of body three and a-half times in total length, length of head four times. Caudal fin truncate; the second anal spine

LABORATORY

stronger, but scarcely longer than the third. Reddish-brown (in spirits), with six bluish, darker-edged, parallel, longitudinal bands; the first from the nape to the soft dorsal, the second from above the eye to the posterior third of the soft dorsal, the third from the eye on and above the lateral line to the back of the tail, the fourth from the eye below the lateral line to the middle of the tail, the fifth from below the eye to the inferior part of the caudal, the sixth from the mouth over the root of the pectoral to the end of the anal fin.

Australia (Gunther).

Genus HYPEROGLYPHE, Richards.

Body oblong, compressed. Eye moderate. Snout blunt, cleft of mouth oblique, with the upper jaw longest. Two dorsals, scarcely united, the first much lower than the second with eight short spines, anal fin with feeble spines. Præorbital and præoperculum serrated, operculum spiniferous. Seven branchiostegals. Villiform teeth in the jaws, without canines. Roof of the mouth with a deep longitudinal groove. Scales small, cycloid. Air bladder simple, pyloric appendages in great number.

An Australian genus.

155. HYPEROGLYPHE POROSA, Richards.

Gunth. Cat. Fishes I., p. 337.

Diagramma porosa, Rich., Voy. Ereb. and Terr., Fishes, p. 26, pl. 16, figs. 5, 6.

B. 7. D. 8. 1/20. A. 3/16. L. lat. 95-100.

The maxillary reaches to below the middle of the eye; both limbs of the præoperculum ciliated; caudal fin emarginate. Brownish in spirits, the soft dorsal and anal fins with two series of dark brown spots.

Coasts of Australia. Five and a-half inches long.

Genus HISTIOPTERUS, Richards.

It is with some doubt that I place this genus among the *Pristipomina*. Dr. Gunther makes no mention of the genus in his Catalogue, but when in 1871 he described a species of it in the Proc. Zool. Soc. of London, he placed it between a *Dentex* and a *Chætodon*, indicating, I fancy, that in his opinion that was its true position. Count Castelnau places it among the *Scombridæ*, and Richardson the founder of the genus among the *Chætodontidæ*.

I have never seen any description of the genus, but it may be shortly defined thus: Body oblong, highest at the occiput, and tapering towards the tail. Head prolonged into a slightly recurved snout. Teeth villiform, forming bands; dorsal fin with seven or eight spines the first three short and more or less detached; anal spines two or three.

156. HISTIOPTERUS RECURVIROSTRIS, Rich.

Voy. Ereb and Terror, p. 34, pl. 22. Casteln. Proc. Zool. Soc. Victoria, I., p. 109.

D. 8. 1/15. A. 3/10. L. lat. 130.

Height of body three times and a-half in the total length, head three times and a-half in the same; the orbit four times and a third in the length of the head. The greatest height of the body is at the back of the head, from this there is gradual conical diminution to the tail; the head isprolonged into a long narrow snout, half the length of the head. The head is covered with bony plates which are strongly striated; the teeth are numerous, in several series, some of those in front longer and a little curved; lateral line sinuous; scales small. The spines of the dorsal fin are seldom united by a membrane, the fourth is the longest; the soft dorsal and anal of triangular form; caudal slightly emarginate; ventrals very large; pectorals rather long. Colour above greyish-blue, beneath whitish, a broad black arched band extends from the beginning of the dorsal to the end of the anal fin, sometimes another fainter band in front of it; a white band on the cheek. Eye yellow, encircled with brown. (Castelnau).

Port Phillip and Tasmania. Length from fifteen to twenty inches.

157. HISTIOPTERUS LABIOSUS, Gunth.

Proc. Zool. Soc., 1871, p. 658, pl. 59.

Richardsonia insignis, Casteln., Proc. Zool. Soc. Victoria I., p. 112.

B. 6. D. 7/17. A. 2/11.

The height of the body is somewhat less than the length of the head, and one-third of the total (without the caudal). Upper profile of the head concave, snout much produced, the eye being entirely in the posterior half of the head. Mouth moderate, lower jaw slightly the longer, lips and chin densely covered with short papillæ. The teeth are in bands *en cardes*, and most of those on the sides are obtuse and molar-like. Scales on the cheeks hidden below the skin. Præoperculum with the hind margin concave and the angle projecting; that and the lower limb indistinctly denticulated. Opercles scaleless. Scales very small; the fourth dorsal spine the longest. Caudal fin emarginate with the angles pointed. Brown, with indistinct, blackish, longitudinal markings. Length of specimen twenty-five inches.

South Australia, Melbourne, and Tasmania.

Genus LOBOTES, Cuv.

Form of body and vertical fins rather elevated. Eye rather small. Snout blunt; mouth oblique, the lower jaw the longer. One dorsal with twelve spines, the anal with three. Caudal fin rounded. No canine teeth. Præoperculum denticulated; operculum with obtuse points. Scales moderate, ctenoid. Six branchiostegals. Air bladder simple, pyloric appendages few. Pseudobranchiæ developed.

Found in every sea.

158. LOBOTES AUCTORUM, Gunth.

Cat. Fishes I., p. 338.—Bleek. Atl. Ichth. Perc., pl. 33, f. 4.

D. 12/15-16. A. 3/11. L. lat. 45. Cæc. pyl. 3. Vert. 13/11.

Caudal fin rounded; the soft dorsal and anal fins rather elevated; nape concave; eye small. Uniform brownish, yellowish or blackish, caudal fin sometimes with a lighter edge.

Port Jackson. Var. *somnolentus.* Endeavour River.

Genus GERRES, Cuv.

Body compressed and elevated. Mouth very protractile. Eye rather large. No canine teeth. Præoperculum generally entire. Six branchiostegals. One dorsal fin deeply notched with nine spines; anal with three. Caudal fin forked. Scales moderate, or minutely ciliated. Air bladder simple, pyloric appendages in small number. Pseudobranchiæ.

All tropical seas, entering rivers.

159. GERRES ABBREVIATUS, Bleek.

Gunth. Cat. Fishes I., p. 345.—Bleek. Atl. Ichth. Perc., pl. 78, f. 4.

D. 9/10. A. 3/7. L. lat. 33. L. transv. 5/10.

The height of the body is contained twice and two-thirds in the total length; the diameter of the eye is one-third of the length of the head. Præorbital and præoperculum entire: the second spine of the dorsal fin more than half the height of the body, and nearly as long as the head; the second and third anal spines strong and rather longer than the rays, one third the height of the body. Coloration uniform; dorsal fin black-edged.

Cape Grenville (Chevert Exp.)

160. GERRES CHEVERTI, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 272, pl. 7, f. 1.

Cape Grenville (Chevert Exp.)

161. Gerres longicaudatus, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 272, pl. 7, fig. 2.

Cape Grenville (Chevert Exp.)

162. Gerres carinatus, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 273, pl. 7, fig. 4.

Darnley Island (Chevert Exp.)

163. Gerres bispinosus, All. & Macl.

Proc. Linn. Soc N. S. Wales, Vol. I., p. 273, pl. 7, fig. 3.

South coast New Guinea (Chevert Exp.)

164. Gerres profundus, Macl.

Proc. Linn. Soc. N. S. Wales, Vol. II., p. 350, pl. 7, fig. 3.

Port Darwin.

165. Gerres punctatus, Cuv. & Val.

Gunth. Cat. Fishes I., p. 346.—Macl., Proc. Linn. Soc. N.S.W., Vol. II., p. 350.

D. 9/10. A. 3/8.

The height of the body is contained thrice and a-half in the total length. The second dorsal spine is prolonged into a short filament, and is sometimes as long as three-quarters of the height of the body. Silvery, dorsal with a narrow black margin, each ray with a brown point at the base. Young individuals with indistinct cross-bands.

Port Darwin.

166. Gerres ovatus, Gunth.

Cat. Fishes I., p. 343, pl. 20, fig. A.

D. 9/10-11. A. 3/7. L. lat. 36. L. transv. 5/10.

The height of the body is twice and a-quarter in the length (without caudal fin); the diameter of the eye is one-third of the length of the head, longer than the snout and equal to the distance between the eyes. The groove for the processes of the intermaxillary bones is short, and does not extend beyond the vertical from the anterior margin of the eye ; no scales between the groove and the orbit. The spines of the dorsal fin are slender and flexible, the second and third longest, and twice and a half in the height of the body, the last four spines half as long as the third. The third anal spine longest, shorter than the first ray, and nearly one-fourth of the height of the body. Coloration uniform, dorsal fin black-edged.

Port Jackson.

167. Gerres subfasciatus, Cuv. & Val.

Gunth. Cat. Fishes I., p. 343.

D. 9/10. A. 3/7.

Height of the body one-third of the total length, the snout rather shorter than the diameter of the eye. Spines of the fins slender, the third of the dorsal is the height of the body, its width less than one twelfth of its length, the second anal spine stronger, but rather shorter than the third, and about one-fifth of of the height of the body. Silvery, with six or seven indistinct vertical bands.

Port Jackson.

168. Gerres australis, Casteln.

Casteln., Res. Fishes of Australia, page 43.

Head three times in the length of the body (without the caudal fin), height of body twice and one-third in the same, snout equal to the diameter of the eye. The second dorsal spine is thick and long, half the length of the body, the third nearly as long, but slender; the second anal spine is stronger but shorter than the third. Colour silvery, with the upper parts purple, the soft dorsal has a line of faint obscure spots. An appearance in some specimens of faint transverse bands on the body. Length from two to two and a-half inches.

Swan River, West Australia.

169. GERRES OYENA, Cuv. & Val.

Gunth. Cat. Fishes I., p. 352.—Bleek. Atl. Ichth. Perc. pl. 77, f. 5.

D. 9/10. A. 3/7. L. lat. 35-38. Cæc. pylor. 3. Vert. 10/14.

The height of the body is contained twice and three-fourths in the length, without the caudal fin. Præorbital and præoperculum entire; the latter with the angle slightly rounded. The snout is a little longer than the diameter of the eye, which is one-third of the length of the head. Spines of fins of moderate length and strength; the second of the dorsal one-half the height of the body and twice as long as the second anal spine. Uniform silvery.

Torres Straits (Castelnau).

170. GERRES ARGYREUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 353.

D. 9/10. A. 3/7. L. lat. 45.

The height of the body is scarcely more than the length of the head, and is one-third of the length of the body (without the caudal fin); the diameter of the eye is one-third of the length of the head, and rather longer than the snout, the extent of which equals the distance between the eyes. The groove for the processes of the intermaxillary bones is entirely scaleless, and does not extend to the vertical from the centre of the eye. The spines of the fins are slender; the second of the dorsal is one-half the height of the body and more than twice the length of the second anal spine, which is rather stronger, but not longer than the third. Silvery; top of the dorsal fin blackish.

Port Jackson (Gunther).

171. Gerres fiamentosus, Cuv. & Val.

Gunth. Cat. Fishes I., p. 345.—Bleek. Atl. Ichth. Perc., pl. 78, f. 3.

D. 9/10. A. 3/7. L. lat. 45. L. transv. 6/12.

The height of the body is twice and one-third in the length, (without caudal fin). Spines of moderate strength; the second of the dorsal produced into a filament, which sometimes extends to the tail. The scaly sheath of the dorsal is high; the second anal spine is stronger and shorter than the third, and one-third of the length of the head. Silvery, with obscure brown spots.

Endeavour River, and Torres Straits.

172. Gerres philippinus, Gunth.

Gunth. Cat. Fishes, Vol. IV., p. 258.

D. 9/10. A. 3/7. L. lat. 48. L. transv. 6/12.

The height of the body is contained twice and two-fifths in the length (without caudal); the length of the head twice and a-fourth, the length of the caudal fin is two-ninths of the total. The diameter of the eye is one-third of the length of the head, equal to the width of the interorbital space, and more than the extent of the snout. The groove for the processes of the intermaxillary bones is rounded behind, naked, and extends beyond the vertical from the anterior margin of the eye. The free portion of the tail is longer than high. The scaly sheath of the dorsal is very high. The second dorsal spine is elongate, equal to two-thirds the height of the body. The second anal spine is much stronger but scarcely shorter than the third, the posterior anal rays covered entirely by the scaly sheath. Pectoral fins very long, reaching to the second anal spine. Silvery, each dorsal ray and the posterior spines with a blackish dot near the base. Three and a-half inches long.

Cape York and Nicol Bay (Gunther.)

173. GERRES MELBOURNENSIS, Casteln.

Proc. Zool. Soc. Victoria, Vol. I., p. 158.

D. 9/16. A. 3/17. L. lat. 37-38.

Height twice and a-half in the length, without caudal; eye large, contained twice and two-thirds in the length of the head; profile over the eye and snout very convex; the length of the dorsal spines and rays slightly increase as they go backwards; caudal fin forked; anal with the third spine longest, and the rays decreasing gradually in length from the first; pectorals shorter than the head, the third ray longest. General colour silvery, the upper parts are blue, and the sides have a copper tinge; there are faint longitudinal lines due to the centre of each scale being darker; the spinous dorsal is purple, and the soft, yellow; the caudal also yellow; and the anal, pectorals, and ventrals pink. Eye yellow, the pupil rather angular.

Melbourne, in the month of July.

I have never seen this Fish, and doubt very much its being a *Gerres*.

Genus GERREOMORPHA, All. & Macl.

Characters of *Gerres*, but with ten dorsal spines.

174. GERREOMORPHA ROSTRATA, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 274, pl. 8, fig. 3.

Torres Straits.

Genus SCOLOPSIS, Cuv.

Form oblong. Eye moderate. Snout moderate, with the cleft of the mouth nearly horizontal. One dorsal with ten spines, anal with three; tail more or less forked. Infraorbital arch with a spine directed backwards. Præoperculum generally denticulated; operculum with an indistinct spine. Scales moderate, ctenoid. Five branchiostegals. Pseudobranchiæ. Air bladder simple; pyloric appendages.

Warm seas from the Red Sea to the Pacific.

175. Scolopsis margaritifer, Bleek.

Gunth. Cat. Fishes I., p. 355.—Bleek. Atl. Ichth. Perc., pl. 39, f. 2.

D. 10/9. A. 3/7. L. lat. 40. L. transv. 4/15.

The height of the body is from three and a-fifth to three and a-third times in the total length, the length of the head about four and a-half times. The diameter of the eye is two and three quarters in the length of the head, longer than the snout, and equal to the distance between the eyes. Præorbital half as wide as the orbit, with a very long and strong spine and some denticulations beneath—the second of these terminating posteriorly in a small point, above the tip of the large spine. Præoperculum with strong short spinous teeth, each with a small hook at the base; the angle projecting backwards, strongly armed. The spines of the fins moderate, the second anal stronger but not longer than the third. The upper lobe of the tail longest. Greenish-olive, each scale with a pearl-coloured base. The marginal half of the dorsal fin violet.

Cape Grenville (Chevert Exp.)

176. Scolopsis longulus, Richards.

Ann. Nat. Hist. IX., 1842, p. 389.—Gunth. Cat. Fishes I., p. 363.

D. 10/9. A. 3/7. L. lat. 42. L. trans. 3/15.

The height of the body is about the length of the head and one-fourth of the total length. The diameter of the eye is rather shorter than the snout, and is three and three-fourths in the head. The præorbital is three-quarters as wide as the eye, with a small spine and some denticulations beneath; præoperculum with the posterior limb very finely serrated, and the angle rounded. Spines of fins moderate, the second anal shorter than the third. Caudal fin emarginate. A yellowish band broadly edged with blackish above and below, from above the pectoral fin to the root of the caudal; two indistinct blackish lines above the lateral line.

Torres Straits, Port Essington, Port Darwin.

177. SCOLOPSIS PERSONATUS, Bleek.

Gunth. Cat. Fishes I., p. 360.—Bleek. Atl. Ichth. Perc., pl. 63, f. 4.

D. 10/9. A. 3/7. L. lat. 50.

The height of the body is three times and three-fourths in the total length, the length of the head four times; the diameter of the eye is three times and a-third in the head. The præorbital is half as wide as the eye, and denticulated beneath the spine; the snout is scarcely longer than the diameter of the eye. Præoperculum with the angle rounded, and the posterior limb slightly emarginated and strongly denticulated. The third anal spine longest. Tail deeply forked with the lobes pointed; the first ray of the ventral fin produced into a short filament. Snout above violet, with a bluish band between the eyes, a broad yellow band from the eye to the tail, the soft dorsal with a violet margin behind.

Port Darwin.

Genus DENTEX, Cuv.

Form oblong, a little elevated; eye moderate. Mouth more or less horizontal. One dorsal with from ten to thirteen spines, anal with three. Caudal fin forked. Canine teeth. Præorbital entire, broad, distance between the eye and the cleft of the mouth great. Præoperculum entire, with more than three series of scales; operculum without prominent spine. Six branchiostegals. Scales moderate, ctenoid. Pseudobranchiæ. Swim-bladder with a notch posteriorly. Pyloric appendages in small number.

Found in all Seas.

178. DENTEX FILIFER, Casteln.

Castelnau, Researches on the Fishes of Australia, p. 12.

D. 12/9. A. 3/7.

The height of the body is three times and one-third in the total length; the head over three times and a-half in the same; the præoperculum has five series of scales; the teeth are numerous, villiform, with an external series of larger ones, and two strong canines on each side of the upper jaw in front, and one on each side in the lower jaw. The tail deeply forked with the third ray of the upper lobe produced into a filament as long as the total length of the fish; the ventrals have the outer ray elongate. Coloration silvery-white (in spirits), with the upper parts of a slate colour; a bright yellow stripe, rather broad, extends from below the eye to the base of the pectorals.

Queensland. One specimen nine inches long.

Genus SYNAGRIS, Gunth.

Characters the same as *Dentex*, except that there are *only* three series of scales between the eye and the angle of the præoperculum.

Found in the Indian and Pacific Seas.

179. SYNAGRIS FURCOSUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 373.

D. 10/9. A. 3/7. L. lat. 48-50. L. transv. 4/14.

The height of the body equals the length of the head, and is one-fourth of the total; the diameter of the eye is thrice and two-thirds in the head, and once and a-half in the length of the snout. The præorbital is higher than the eye. Six canine teeth in each jaw. Spines of fins slender, flexible, the fourth, fifth, and sixth longest, about twice and a-third in the length of the head. Caudal fin deeply forked, scaly, the upper lobe rather the longer, the second and third anal spines very feeble and nearly equal in size; the posterior rays of the dorsal and anal fins slightly elongate. Coloration uniform reddish-yellow.

North and North-east Australia, Palm Islands, and Cape Grenville (Chevert Exp.)

180. SYNAGRIS TÆNIOPTERUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 374.—Bleek. Atl. Ichth. Perc., pl. 56, f. 5.

D. 10/9. A. 3/7. L. lat. 48. L. trans. 4/11.

The height of the body nearly equals the length of the head, and is three times and two-thirds in the total length, the snout is longer than the diameter of the eye, which is one-fourth of the length of the head. The præorbital is as high as the eye. The spines of the fins are slender, the posterior of the dorsal the longest, but rather shorter than the rays. The third anal spine is intermediate in length between the second spine and the first ray; the posterior rays of both dorsals and anal rather elongated. Rose-coloured, with yellow longitudinal bands on the body; a yellow band from the base of the first dorsal spine to the top of the last ray.

North-east Coast. Cape Sidmouth (Chevert Exp.)

Genus PENTAPUS, Cuv.

Differs from *Dentex* and *Synagris* chiefly in having the præorbital narrow, the distance between the eye and the cleft of the mouth small, and the swim-bladder without notch behind.

East Indian and Australian Seas.

181. PENTAPUS VITTA, Cuv. & Val.

Gunth. Cat. Fishes I., p. 381.

D. 10/9. A. 3/7-8. L. lat. 60. L. transv. 6/20.

The margin of the præoperculum without scales, slightly striated. The height of the body equals the length of the head, and is about one-fourth of the total length. The diameter of the eye is shorter than the snout, and the distance between the eyes one-fourth of the length of the head. Caudal fin forked, with acute lobes. The spines of the fins feeble, the second of the anal one half of the third. Scales of præoperculum in six series. A broad brownish band from the snout through the eye to the upper half of the root of the tail.

Western and North Western Coasts.

182. PENTAPUS SETOSUS, Bleek.

Gunth. Cat. Fishes I., p. 382.—Bleek. Atl. Ichth. Perc., pl. 46, f. 1.

D. 10/9. A. 3/7. L. lat. 60. Cæc. pylor. 5. Vert. 10/13.

The height of the body equals the length of the head, and is four times and three-fourths in the total length ; the diameter of the eye is three times and a-half in the length of the head. The middle spines of the dorsal fin are the longest ; the first ventral ray is produced into a filament which reaches the anal ; the third anal spine is intermediate in length between the second spine and the first ray. The upper lobe of the caudal produced into a long filament. A blue and yellow band from the muzzle through the eye to the operculum ; a brown blue-edged spot at the root of the caudal ; dorsal fin with the upper margin yellow.

North Coast. Port Jackson (Macl. Mus.)

183. PENTAPUS PARADISEUS, Gunth.

Cat. Fishes I., p. 383, pl. 24, fig. A.

D. 10/9. A. 3/7. L. lat. 45. L. transv. 5/16.

The height of the body equals the length of the head, and is one-fourth of the total length (without caudal filament). The diameter of the eye is three times and three-quarters in the length of the head. Middle spines of dorsal fin longest ; the first ray of the ventral sometimes prolonged into a filament, which does not reach the vent ; the third anal spine intermediate in length between the second spine and first ray; the upper lobe of the caudal produced into a long filament. Muzzle above bluish-silvery with two yellow cross-bands, the anterior running to the middle of the eye, crossing the præorbital. A third yellow band runs from the præorbital, along the inferior margin of the orbit, across the cheek, operculum and suboperculum, to the base of the pectoral. A silvery longitudinal band from the middle of the eye, along the side of the body below the lateral line, to the upper part of the tail, and convergent with another pearl-coloured band from the origin of the anal: both the latter bands meet at an acute angle in the middle of the base of the caudal fin. Finally a pearl-coloured band on the back, along the base of the dorsal fin.

North and East Coasts. Cape Sidmouth (Chevert Exp.)

Genus APHAREUS, Cuv. & Val.

Body oblong; eye moderate; mouth slightly obligue, wide, the lower jaw longer. One dorsal with ten or twelve spines, the anterior part highest, spines feeble, caudal fin deeply forked. No canines. No teeth on the palate; præorbital and præoperculum entire. Scales rather small. Seven branchiostegals. Air-bladder simple, a (respiratory) cavity behind the branchiæ, at the interior of the humerus; pyloric appendages in small number.

From the Red Sea to Australia.

184. APHAREUS ROSEUS, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. III., p. 373.

Port Jackson.

Genus ERYTHRICHTHYS Temm. & Schleg.

Form elongate; eye moderate; mouth very protractile; two dorsal fins, with some isolated spines between. Tail forked. No teeth in the jaws or palate, cardiform teeth on the pharyngeal bones. Præoperculum entire. Scales rather small. Six or seven branchiostegals. Pseudobranchiæ.

Indian and Australian Seas.

185. ERYTHRICHTHYS NITIDUS, Richards.

Gunth. Cat. Fishes I., p. 395.

Emmelichthys nitidus, Rich., Voy. Erebus and Terror, p. 47, pl. 29, fig. 7-8.

B. 7. D. 9. 3/1/9-10. A. 5/10. L. lat. 96. L. transv. 8/20.

Uniform greyish-silvery. The angle of the præoperculum rounded.

West Australia.

FAMILY II. SQUAMIPINNES.

Perciform fishes, with the body generally very elevated, and with the vertical fins covered with small scales.

Genus CHÆTODON, Cuv.

Body much compressed and elevated. One dorsal fin without any notch, spinous and soft portions equally developed, none of the spines elongate. Muzzle short or of moderate length. No teeth on the palate; præoperculum entire or slightly serrated, without spine. Scales large or of moderate size. Six branchiostegals. Air-bladder with horns or two divisions. Intestinal tractus with many convolutions; pyloric appendages in moderate number.

All tropical Seas.

186. CHÆTODON STRIGATUS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 34.

D. 11/17. A. 3/14. L. lat. 60. L. transv. 10/21.

Snout scarcely produced, equal to or rather shorter than the diameter of the eye; præoperculum very distinctly denticulated;

the soft dorsal fin not higher than the spinous, which is equal in height to the distance between the posterior margin of the eye and the extremity of the snout. Body with five or six brown longitudinal bands, the first and second continued on the soft dorsal, the fourth and fifth on the anal.

Port Jackson.

187. CHÆTODON SEXFASCIATUS, Richards.

Gunth. Cat. Fishes II., p. 35.

D. 10/21. A. 3/17-19. L. lat. 90.

Snout very slightly produced, about equal to the diameter of the eye; præoperculum very distinctly serrated. The dorsal and anal fins rounded posteriorly. Six brown vertical bands the anterior of which goes through the eye from the nape of the neck, to the root of the ventrals.

West Australia. King George's Sound (Macl. Mus.)

188. CHÆTODON AUREOFASCIATUS, Macl.

Proc. Linn. Soc. N.S. Wales, Vol. II., p. 351, pl. 8, fig. 3.

Port Darwin.

189. CHÆTODON OCELLIPINNIS, Macl.

Proc. Linn. Soc. N. S. Wales, Vol. III., p. 33, pl. 3, fig. 1.

King George's Sound.

190. CHÆTODON OLIGACANTHUS, Bleek.

Gunth. Cat. Fishes II., p. 34.—Bleek. Atl. Ichth. Chætod., pl. 15, fig. 4.

D. 6/30. A. 3/20. L. lat. 46.

The anterior part of the soft dorsal fin elevated, the sixth spine the longest. Yellowish, with five brownish vertical bands; the first through the eye, the second across the opercle, the third and fourth to the anal fin, the fifth on the tail: the fourth with a round black spot at the base of the dorsal fin, the fifth edged with yellow; a red band from the snout to the forehead.

Port Jackson. Port Darwin.

191. CHÆTODON SETIFER, Bl.

Gunth. Cat. Fishes II., p. 6.—Less. Voy. Coquille, p. 175, pl. 29, f. 2.

D. 13/23. A. 3/20. L. lat. 33. L. transv. 6/13.

Snout produced, pointed, conical, one-half longer than the diameter of the eye; præoperculum very indistinctly serrated; the fifth dorsal ray more or less elongate, filiform. The ocular band extends over the interoperculum, is narrower above the orbit and wider below. The anterior part of the back with blackish streaks obliquely descending forwards, the rest of the body with streaks obliquely ascending forwards. Top of the dorsal behind the fifth ray, with a round black white-edged spot. The vertical fins with a very fine blackish marginal line; ventrals whitish.

Cape York (Castelnau). Sydney (Kner.)

192. CHÆTODON VITTATUS, Bl.

Gunth. Cat. Fishes II., p. 23.—Bleek. Atl. Ichth. Chætod., pl. 15, fig. 1.

D. 13/21. A. 3/20. L. lat. 38. L. transv. 5/13. Vert. 10/14.

Snout short, obtuse, and equal in length to the diameter of the eye; præoperculum very indistinctly serrated; the dorsal and anal fins with the posterior angle rounded. Body with parallel and slightly oblique blackish streaks. Snout blackish, separated from the ocular band by a white streak; the ocular band white-edged, encircling the chest, much narrower than the orbit; a very narrow blackish, anteriorly white-edged stripe behind, and parallel to, the ocular band, along the præopercular margin. A cuneiform, black, yellow edged band from the origin of the soft dorsal to the back of the tail, where it is broadest. A black yellow-edged band along the base of the anal fin. The soft dorsal with an indistinct reddish band along its middle. The tail crossed in the middle by a black yellow-edged bar; ventrals whitish.

Cape York (Castelnau).

193. CHÆTODON PLEBEJUS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 5.

D. 14/17. A. 4/15. L. lat. 45. L. transv. 6/15.

The snout is rather obtuse, and nearly equal in length to the diameter of the eye, præoperculum scarcely denticulated; the dorsal and anal fins rounded posteriorly. The ocular band reaches from the side of the neck to the inferior margin of the interoperculum, is white-edged, and darker above the eye than below. Tail with a large, rounded, blackish, white-edged spot near its back, immediately below the end of the dorsal.

Sue Island, Torres Straits (Chevert Exp.)

Genus NEOCHÆTODON, Castelnau.

Differs from *Chætodon* in having a bifid tooth on the palate, the operculum strongly serrated behind and at the rounded angle, and the second anal spine very large.

194. NEOCHÆTODON VITTATUM, Casteln.

Proc. Zool. Soc., Victoria, Vol II., p. 130.

Form oval, high; back gibbous, height of body half the length (without the caudal fin). Eye large, of the length of the snout; præorbital serrated. Colour light yellow, with six broad, longitudinal streaks of a fine black on the body, the two lower ones curved downwards; the dorsal fin has a blue band, the other fins are yellow.

One specimen three inches long from West Australia.

Count Castelnau suggests that *Chætodon strigatus*, should be placed in the same genus as this species.

Genus CHELMO, Cuv.

Body much compressed and elevated; one dorsal fin with nine or more spines, none elongate. Muzzle produced into a long cylindrical tube, with a small anterior cleft of the mouth. No teeth on the palate, præoperculum without spine. Scales moderate or small.

Indian and Australian Seas.

195. CHELMO ROSTRATUS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 36.—Bleek. Atl. Ichth. Chæt., pl. 7, f. 2.

D. 9/30. A. 3/21. L. lat. 47. L. transv. 9/20. Vert. 10/14.

The length of the snout from the eye is one-half the entire length of the head. Head and body with five brownish cross-bands, edged with brown and white, a round, black, white-edged spot in the middle of the soft dorsal, within the fourth cross band, the fifth band black round the tail.

North-west Coast, Port Essington, Port Darwin and Cape York.

196. CHELMO MARGINALIS, Richards.

Ann. Nat. Hist. 1842, X., p. 29.—Gunth. Cat. Fishes II., p. 36.

D. 9/30. A. 3/21. L. lat. 50. L. transv. 9/22. Cæc. pylor. 5. Vert. 10/14.

Length of snout half that of the head. Head and body with four brownish cross-bands, edged with brown and white; sometimes an indistinct blackish spot in the middle of the soft dorsal, within the third cross-band, the fourth band round the tail.

West Australia. Swan River.

I find that the species mentioned by me in "The Fishes of Port Darwin" (Proc. Linn. Soc. N. S. Wales, Vol. II., p. 352) as

C. marginalis, is the following species. It is doubtful if *marginalis* has ever been seen excepting on the West Coast.

197. CHELMO TRICINCTUS, Casteln.

Researches on the Fishes of Australia, p. 14.

The snout is one-half the length of the head; the profile from that part to the base of the dorsal fin is nearly perpendicular; the dorsal and anal fins are almost truncate behind. The colour is yellowish with numerous longitudinal, obscure, narrow stripes on the body; a double band extends from the base of the dorsal through the eye to beneath the operculum, another is placed further backwards, crosses the posterior part of the operculum, and extends to the base of the ventral fin; a third forms a ring round the tail. All these bands are formed of two black narrow lines, having between them a broader space of the general colour of the body. The soft parts of the dorsal and anal fins have a narrow black margin.

Port Darwin. From three to three and a-half inches long.

198. CHELMO LONGIROSTRIS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 38.—Bleek. Atl. Ichth. Chæt., pl. 4, f. 5.

D. 12/23. A. 3/18. L. lat. 75. L. transv. 12/30.

The length of the snout is much more than half that of the head. A large triangular black patch covering the neck, the upper surface of the head, and the side downwards to the level of the inferior margin of the eye; a round black spot at the posterior angle of the anal fin; caudal blackish.

Cape York (Castelnau).

199. CHELMO TRUNCATUS, Kner.

Gunth. Cat. Fishes II., Add. p. 516.

D. 11/26. A. 3/21. L. lat. 43-44.

The length of the snout is not quite half that of the head; dorsal and anal fins angular, truncated posteriorly. Silvery with five black transverse bands, between which are others of a greyish colour.

Port Jackson. King George's Sound.

200. CHELMO TROCHILUS, Gunth.

Ann. Mag. Nat. Hist. 1874, Vol. XIV., p. 368.

D. 11/27. A. 3/8. L. lat. 55.

Body as high as long, head and caudal fin excluded. The length of the snout is contained twice and one-third in that of the head. Anterior part of the soft dorsal and anal fins produced into an acute point, the hind margin of the fins being vertical. Caudal fin truncated. Silvery; head and body with five black transverse bands, the first (the ocular band) much narrower than the orbit, extending from the nape to the interoperculum, and edged with white above the eye; the second, rather broader than the first, runs from the three anterior dorsal spines over the operculum across the chest in front of the ventrals; the third, twice as broad as the second, from the sixth, seventh, and eighth spines to the abdomen, the fourth, between the pointed angles of the dorsal and anal fins; the fifth narrow, round the middle of the free portion of the tail; an indistinct and incomplete cross-band between the first and second, and another between the second and third bands; some irregular blackish spots in the interspaces. Hind-margin of the dorsal and anal fins blackish. Caudal uniform reddish; ventrals black, with yellowish spine.

Australia (Gunther). Seven inches long.

Genus HENIOCHUS.

Differs from *Chætodon* in having the fourth dorsal spine elongate and filiform. Five branchiostegals.

Indian and Australian Seas.

201. HENIOCHUS MACROLEPIDOTUS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 39.—Bleek Atl. Ichth. Chætod., pl. 5, f. 1.

D. 11/24. A. 3/17. L. lat. 48. L. transv. 10/22. Cæc. pylor. 6. Vert. 10/14.

The fourth dorsal spine exceedingly elongate. A small protuberance above each orbit, none on the neck. The upper surface of the snout and a band between the orbits black. Body with two broad black bands, the anterior from the first four dorsal spines, touching the hind-margin of the operculum, across the root of the pectorals to the belly, including the ventrals, which are deep black; the posterior band from the fifth, sixth, and seventh dorsal spines descending obliquely backwards, and occupying the posterior half of the anal fin; the anterior half is black-edged.

Port Darwin. Port Essington.

202. HENIOCHUS VARIUS, Cuv. & Val.

Gunther, Cat. Fishes II., p. 41.—Bleeker, Atlas Ichth. Chætod., pl. 3, fig. 2.

D. 11/23. A. 3/17. L. lat. 53.

A protuberance above each orbit, conical and horn-like in adult specimens, scarcely visible in young ones; a third, obtusely conical, on the nape of the neck. A black band from the origin of the dorsal fin, occupying the whole head to the præopercular margins; the second black band nearly entirely suppressing the ground colour from the third to the seventh dorsal spines, to the belly, and extending from the root of the pectorals and ventrals to the end of the anal, which like the ventrals is entirely black.

Cape York. (Castelnau, Res. Fishes of Aust., p. 15.)

Genus HOLACANTHUS.

Differs from *Chætodon* in having a strong spine pointing backwards at the angle of the præoperculum.

All tropical Seas.

203. HOLACANTHUS SEXSTRIATUS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 49.—Bleek. Atlas Ichth. Chætod., pl. 10, fig. 2.

D. 13/18-19. A. 3/18. L. lat. 48. L. transv. 7/25.

The præopercular spine is smooth, and reaches to the base of the pectoral, the dorsal and anal fins are not produced. Head and ventral fins brown; the former with a white vertical band, descending from the nape of the neck, between the eye and præopercular margin to the spine. Body with six brown vertical bands; each scale with the centre darker.

Port Darwin. Cape Grenville (Chevert Exp.)

204. HOLACANTHUS DUBOULAYI, Gunth.

Ann. and Mag. Nat. Hist. 1867, Vol. XX., p. 67.—Macl., Proc, Linn. Soc. N.S. Wales, II., p. 352.

D. 11/23. A. 3/20.

Præopercular spine reaches to the vertical from the hind margin of the operculum. Dorsal and anal fins rounded posteriorly. Head and anterior part of the body yellow, the remainder brown. A very broad ocular band, broader than the eye, descends from the neck to the ventral fins. The brown portion of the body is coarsely reticulated with yellow, the lines descending from the back to the belly. Caudal fin and a cuneiform band along the hinder half of the base of the dorsal, yellow.

North-west Coast. Port Darwin.

Genus SCATOPHAGUS, Cuv. & Val.

Differs from *Chætodon* in having a recumbent spine pointing forwards in front of the dorsal fin, and in having four spines to the anal.

205. SCATOPHAGUS ARGUS, Linn.

Gunth. Cat. Fishes II., p. 58.—Bleek. Alt. Ichth. Chætod., pl. 1, fig. 2.

D. 11/16. A. 4/14. Cæc. pylor. 20. Vert. 11/12.

The width between the eyes is twice and a-third in the length of the head; the length of the fourth dorsal spine is twice and a-half in the height of the body. Præorbital with the lower posterior angle denticulated. Body and vertical fins spotted with brown.

Port Jackson, Brisbane, Cape York.

206. SCATOPAGUS TETRACANTHUS, Lacep.

Gunth. Cat. Fishes II., p. 60.

D. 11/10. A. 4/14.

Brownish with five dark vertical bands.

Port Darwin.

207. SCATOPHAGUS MULTIFASCIATUS, Richards.

Voy. Ereb. and Terr., Fishes, p. 57, pl. 35, f. 4-6.—Gunth. Cat. Fishes II., p. 60.

D. 12/17. A. 4/16.

The width between the eyes is twice and two-thirds in the length of the head; the third dorsal spine is the longest, and is twice and one third in the height of the body. Præorbital with the lower posterior angle minutely serrated. Back with about twelve narrow vertical bands, between which are others still narrower and shorter.

Genus DREPANE, Cuv. & Val.

Body much compressed and elevated. Snout short with the upper profile parabolic. Dorsal fin deeply emarginate with eight spines. Pectorals elongate, falciform. Anal spines three. No præopercular spine.

Indian and Australian Seas.

208. DREPANE PUNCTATA, Cuv. & Val.

Gunth. Cat. Fishes II., p. 62.—Bleek. Atl. Ichth. Chætod., pl. 3, fig. 4.

D. 8/20. A. 3/18. L. lat. 50. L. transv. 14/33. Cæc. pylor. 2-3.

The third dorsal spine longest, the first of the ventral fin elongate; the pectoral reaches to or near the root of the caudal. Uniform silvery, with vertical series of brown specks which are sometimes confluent.

North-west Coast. Cape York.

Genus SCORPIS, Cuv. & Val.

Body compressed and elevated. Snout moderate. One dorsal fin with nine or ten spines, anal with three, the soft portions of both densely scaly. Jaws with an outer series of stronger teeth; teeth on the vomer and palatine bones. Seven branchiostegals; air-bladder present; pyloric appendages in very great number.

Pacific Ocean.

209. SCORPIS GEORGIANUS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 64.

D. 9/26. A. 3/27.

The soft dorsal and anal fins falcate, the anterior rays being elevated. Uniform brownish.

King George's Sound.

210. SCORPIS ÆQUIPINNIS, Richards.

Voy. Erebus and Terror, Fishes, p. 121.—Gunth. Cat. Fishes, II., p. 64.

Scorpis lineolatus, Kner., Voy. of Novara., Fishes, p. 108, pl. 5, f. 3.

"*The Sweep*" of the Sydney Fishermen.

D. 10/27. A. 3/27.

The lower margin only of the præoperculum finely serrated. The dorsal and anal fins are not falcate, the rays becoming gradually shorter posteriorly. Uniform brownish black.

Port Jackson.

211. SCORPIS VINOSA, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 277, pl. 9, fig. 2.

Darnley Island (Chevert Exp.)

Genus ATYPUS, Gunth.

Body compressed, oblong. Snout short. Mouth small. Dorsal fin with eleven spines, anal with three, the soft portions of both covered with scales. Scales rather small, ctenoid. Villiform teeth in the jaws and on the vomer, none on the palatine bones. Præoperculum denticulated. Branchiostegals seven. Air-bladder bifurcate anteriorly and posteriorly.

Australian Seas.

212. ATYPUS STRIGATUS, Gunth.

Gunth. Cat. II., p. 64.

Atypichthys strigatus, Casteln., Proc. Linn. Soc. N. S. Wales, III., p. 375.

D. 11/15-16. A. 3/15-16. L. lat. 70-75. L. transv. 11/26. Cæc. pylor. 11.

Silvery with five or six brown parallel, longitudinal bands.

Port Jackson. Swan River.

Genus TOXOTES, Cuv.

Body compressed, oblong; snout rather produced, with the lower jaw longest; eye of moderate size. One dorsal fin with five spines, situated on the posterior part of the back, the soft portion and the anal fin scaly. Villiform teeth in the jaws, on the vomer and the palatine bones. Scales of moderate size, cycloid. Seven branchiostegals; air-bladder simple; pyloric appendages in moderate number.

Indian and Australian Seas.

213. Toxotes jaculator, Cuv. & Val.

Gunth. Cat. Fishes II., p. 67.—Bleek. Atl. Ichth. Chætod., pl. 1, fig. 4.

D. 5/11-13. A. 3/15-17. L. lat. 28. L. transv. 3-4/7-8 Cæc. pylor. 7-9. Vert. 10/14.

The length of the snout equals the width of the space between the eyes. Greenish with broad darker bands or spots across the back.

Port Darwin, Endeavour River.

214. Toxotes carpentariensis, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 47.

Norman River. Gulf of Carpentaria.

Family III. NANDIDÆ.

Perciform Fishes, with an interrupted lateral line.

Genus Plesiops, Cuv.

Body compressed, oblong. Scales moderate. Mouth somewhat protractile. Dorsal fin with eleven or twelve spines, anal with three. Ventral fin with four rays; the first elongate and bifid. Small teeth in the jaws, on the vomer and palatine bones. None of the bones of the head serrated. Six branchiostegals; four gills, pseudobranchiæ; an air-bladder; pyloric appendages none.

Indian and Australian Seas.

215. Plesiops cæruleo-lineatus, Rupp.

Gunth. Cat. Fishes, III., p. 363.

D. 11-12/7. A. 3/8. V. 1/4. L. lat. 23.

The height of the body is contained four or five times in the total length; the length of the head three times and three-quarters. Snout convex. The maxillary extends behind the vertical from the posterior margin of the orbit. Black, each scale with a blue spot; an oblique, blue, longitudinal line on the dorsal and anal fins. Caudal sometimes with a red band, parallel to the margins.

Australia, from Mr. Macgillivray's collection

216. PLESIOPS BLEEKERI, Gunth.

Gunth. Cat. III., p. 364, and Journ. Mus. Godeff. Heft. VII., p. 87, pl. 58, fig. A.

D. 12/9. A. 3/18. P. 18. V. 1/4. L. lat. 45. L. transv. 5/19.

Reddish or yellowish with four broad black bands.

Port Jackson (Macl. Mus.)

Genus TRACHINOPS, Gunth.

Body compressed, elongate. Scales small not ciliated. Mouth not protractile. Dorsal and anal fins long, the former with fourteen, the latter with three spines. Teeth in the jaws, on the vomer and palatine bones; bones of the head not serrated. Five branchiostegals; gills three and a half. Pseudobranchiæ; the gill membranes not united below the throat.

Coasts of Australia.

217. TRACHINOPS TŒNIATUS, Gunth.

Gunth. Cat. III., p. 366.—Kner., Fishes Novara, p. 215, pl. 8, f. 7.

D. 14/16. A. 3/20. L. lat. 62.

Back brownish-black, with a white band running on each side of the base of the dorsal fin.

New South Wales.

Genus RUPPELIA, Casteln.

Eye large. Body oblong, scales moderate; opening of mouth oblique and superior; teeth villiform, in several series, the outer series of larger teeth; teeth on the vomer and palatine bones, and also on the tongue, a fleshy filament on each side of the upper lip near the centre; lateral line interrupted; twelve dorsal spines; three anal. Ventrals, one spine and three rays.

218. RUPPELIA PROLONGATA, Casteln.

Proc. Zool. Soc, Victoria, II., p. 51.—Res. Fish. Aust. p. 29.

D. 12/10. A. 3/10. V. 1/3. L. lat. 45.

Height twice and three-quarters in the length without caudal fin, head thrice and a-quarter in the same, diameter of the eye four times and a-half in the length of the head. The lower jaw longer than the upper; head without scales and grooved between the eyes, operculum prolonged into a rounded angle near the base of the pectoral fin. The spines of the dorsal increase gradually in length, the twelfth being about twice as long as the second, which is twice the length of the first, the middle rays of the soft dorsal and anal are very much prolonged, reaching to or beyond the caudal; the ventral rays are also elongate. The lateral line terminates at the end of the the soft dorsal fin, but another line is marked in the middle of the side for some distance from the tail; caudal pointed. Colour dark brownish-green, entirely covered with small rounded, light blue spots. Length about twelve inches.

Port Phillip. West Australia.

Count Castelnau classed this Fish with the *Nandidæ*, and therefore I place it here, but I fancy from his description of the genus that it would be more naturally placed among the *Pseudochromidæ*.

FAMILY IV. MULLIDÆ.

Body elongate, slightly compressed, *covered with large scales*. Profile of head more or less parabolic; *hyal apparatus with two long barbels*. Lateral line continuous. Mouth small. Eye lateral of moderate size. *Four branchiostegals;* pseudobranchiæ. Dentition feeble. Two dorsal fins remote from each other; anal similar to second dorsal. Stomach syphonal.

Genus UPENEOIDES, Bleek.

Teeth in both jaws, on the vomer and palatine bones.

Indian and Australian Seas.

219. UPENEOIDES VITTATUS, Linn.

Gunth. Cat. Fishes I., p. 397.—Bleek. Atl. Ichth. Mull., pl. 2, f. 3.

D. 8. 1/8. A. 7. L. lat. 39. L. transv. 3/6.

The length of the head is four times and one-fifth in the total; the barbels reach to the vertical from the angle of the præoperculum; the height of the spinous dorsal is four-fifths of that of the body. Body with two or three longitudinal bands, shining golden; the spinous dorsal with the top black, and with one or two blackish bands; the upper lobe of the caudal with three or four, the lower with two or three, oblique, black bands.

Endeavour River (Macl. Mus.)

220. UPENEOIDES TRAGULA, Richards.

Gunth. Cat. Fishes I., p. 398.—Bleek. Atl. Ichth. Mull., pl. 2, f. 2.

D. 8. 1/8. A. 7. L. lat. 30. L. transv. 2/5.

The length of the head is four times and three-fourths in the total length; the barbels do not reach to the vertical from the posterior margin of the præoperculum. The height of the spinous dorsal is three-quarters of that of the body. Vomerine teeth in two lateral strips. Head, body, and anal, pectoral and ventral fins sparingly and irregularly spotted with brownish; a brown longitudinal band from the snout through the eye to the base of the tail; dorsal fins largely marbled with blackish; each lobe of the caudal fin with five or six oblique, brown cross-bands.

Port Darwin. Palm Islands. Port Jackson.

221. UPENEOIDES TÆNIOPTERUS, Cuv. & Val.

Kner. Voy. Novara, Fishes, p. 68.

D. 8-9. 9. A. 7.

Height of body one-fifth of the total length, the diameter of the eye is one-fourth of the length of the head, and is once and a-quarter in the width of the interorbital space. The colour is red, with a more brilliant red spot at the root of the tail; the fins are marked with brown bands. The second dorsal spine is equal to the distance from the front of the snout to the extreme edge of the præoperculum.

New Holland (Kner.) Length ten inches.

222. UPENEOIDES VLAMINGII, Cuv. & Val.

Gunth. Cat. Fishes I., p. 400.

D. 8. 9. A. 8. Cæc. pylor. 30.

The height of the body equals the length of the head and is three times and two-thirds in the total length. The barbels reach to the angle of the præoperculum. The vomerine teeth are divided into two lateral groups. Red; each scale with a violet speck forming together longitudinal series, snout and cheeks with oblique violet streaks; the second dorsal and anal fins with longitudinal series of violet specks.

Port Jackson. Port Phillip.

223. UPENEOIDES ROSEUS, Casteln.

Researches on the Fishes of Australia, p. 11.

D. 7. 1/8. A. 7.

Height of body four times and a-half in the length without the caudal fin, the head three times and one-third in the same; eye three times and a-third in the length of the head; teeth large and numerous on the vomer and palatine bones; the height of the spinous dorsal less than two-thirds of that of the body. Caudal fin strongly forked. Body pink with the upper parts purple, head above olive; the belly silvery; on each side a broad gold band; fins immaculate, the dorsal, caudal and pectoral fins are olive-yellow, the ventrals flesh-colour; the barbels are long.

Cape York. Specimen five and a-half inches long.

Genus MULLOIDES, Bleek.

Teeth in both jaws in *several* series, none on the vomer or palatine bones.

All tropical seas.

224. MULLOIDES FLAVOLINEATUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 403.—Bleek. Atl. Ichth. Mull., pl. 4, f. 3.

D. 7. 1/8. A. 8. L. lat, 35-36. L. transv. 2/5-6. Cæc. pylor. 18. Vert. 10/14.

The height of the body is five times and a-third in the total length; the space between the eyes is once and a-half in the length of the snout, and flat; the barbels reach to the vertical from the angle of the præoperculum; the spinous dorsal is nearly as high as the body. A broad citrine band from the eye to the tail; yellow streaks on the tail; fins immaculate.

New Holland (Kner. Voy. of Novara).

Genus UPENEUS, Cuv. & Val.

The teeth in both jaws in a single series, none on the palate.

All tropical seas.

225. UPENEUS BARBERINUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 405.—Bleek. Atl. Ichth. Mull. pl. 3, f. 1.

D. 8. 9. A. 7. L. lat. 29-31. L. transv. 2/7. Vert. 10/14.

The height of the body is four times and a-third in the total length; the distance between the eyes is one half of the length of the snout; the barbels reach slightly beyond the vertical from the angle of the præoperculum. A black band from the eye along the lateral line to below the anterior half of the second dorsal; a round black spot on each side of the root of the caudal.

New Holland (Kner., Fishes of the Novara).

226. UPENEUS MALABARICUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 407.—All. & Macl. Proc. Linn. Soc. N.S. Wales, Vol. I., p. 274.

D. 7. 1/9. A. 7. L. lat. 30. L. transv. 3/7.

The barbels reach beyond the angle of the præoperculum. A large ovate white spot on the lateral line above the extremity of the pectoral fin; a black spot on each side of the root of the tail.

Cape Grenville (Chevert Exp.)

227. UPENEUS POROSUS, Cuv. & Val.

Gunth. Cat. Fishes I., p. 400.—Ann. and Mag. Nat. Hist. 1867, Vol. XX., p. 59.

D. 8. 1/8. A. 7. L. lat. 30.

Body elevated anteriorly, about a third of the length. Snout twice as long as the eye. The barbels extend to the vertical from the hind margin of the operculum. Two silvery streaks between the eye and the mouth; parts above the lateral line clouded with darker; spinous dorsal blackish.

Port Jackson, Port Phillip, and Tasmania.

228. UPENEUS SIGNATUS, Gunth.

Ann. and Mag. Nat. Hist. 1867, Vol. XX., p. 59.

D. 8. 1/8. A. 1/6. L. lat. 30-31.

The height of the body is contained thrice or thrice and one-third in the length (without caudal). Head not much longer than deep, snout only twice as long as the diameter of the eye. Barbels extending to the hind margin of the præoperculum. Dorsal spines flexible at the top. Tubes of the lateral line with rather long lateral branchlets, in small number. Coloration as in *U. barbarinus,* but with the black caudal spot large, square, and extending over the back of the tail; a whitish blotch in front of it.

Port Jackson.

FAMILY V. SPARIDÆ.

Perciform fish with either incisor teeth in front of the jaws, or lateral series of molar teeth.

1.—*Incisor teeth, vegetable feeders.*

Genus PACHYMETOPON, Gunth.

Behind the incisor teeth in each jaw, a similar band, but less developed, and replacing the former. No molars; no teeth on the palate. Dorsal and anal fins partly, caudal entirely, hidden by scales. Dorsal without notch and with eleven spines, scales moderate, cheek scaly.

Australian Seas.

229. PACHYMETOPON GRANDE, Gunth.

Gunth. Cat. Fishes I., p. 424, pl. 26.

D. 11/11. A. 3/10. L. lat. 88. L. transv. 11/22.

A large and convex transverse protuberance between the eyes. Coloration uniform greyish, with the fins blackish.

I think that a fish in my Museum, taken in Port Jackson is this species. Dr. Gunther when he described it was not acquainted with its "habitat."

230. PACHYMETOPON SQUAMOSUM, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 275, pl. 9, fig. 1.

Torres Straits, South Coast of New Guinea.

Genus GIRELLA, Gray.

Incisors generally tricuspid. Cheeks scaly; opercles naked, except the upper angle of the operculum. Dorsal spines can be received into a rather incomplete groove. Scales moderate. Six branchiostegals. Pyloric appendages in great number; air-bladder divided into two posterior horns.

Chinese and Australian Seas.

231. GIRELLA TRICUSPIDATA, Cuv. & Val.

Gunth. Cat. Fishes I., p. 428.—Richards, Ereb. and Terr., Fishes, p. 36, pl. 25, f. 2.

"*Black Fish*" of the Sydney Fishermen.

D. 15/11-12. A. 3/11 12. L. lat. 50. L. transv. 10/20. Vert. 11/16.

The length of the head is four times and two-thirds in the total length; dorsal fin moderately high, the spinous portion lower than the soft, the incisors three-pointed, moderately broad, imbricate, in several series in the upper, in two in the lower jaw. Uniform brownish.

Port Jackson, Victorian and New South Wales Coasts.

232. GIRELLA SIMPLEX, Richards.

Voy. Ereb. and Terr., Fish., p. 25.—Gunth. Cat. Fishes, I., p. 429.

D. 15-14/12-13. A. 3/12. L. lat. 55. L. trans. 11/20.

The length of the head is one-fifth of the total length; dorsal fin of moderate height, the spinous portion about as high as the soft; the incisors with the cutting margin entire, moderately broad, imbricate, above and below in two or three irregular series. A short series of teeth on the anterior portion of the palatine bones. Uniform brownish or blackish.

Port Jackson. Port Phillip.

233. GIRELLA ZONATA, Gunth.

Gunth. Cat. Fishes, I., p. 429, pl. 27.

D. 14/14. A. 3/11. L. lat. 49. L. transv. 9/17.

In both jaws a pluriserial band of narrow tricuspid teeth, separated from a posterior band of similar teeth by a groove. Brown (in spirits) with a vertical lighter zone across the middle of the back; the vertical fins and the ventrals blackish.

Australian Seas ? (Gunther).

234. GIRELLA BLACKII, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 41.

D. 15/12. A. 3/12. L. lat. 53-54. L. transv. 32.

Body oval, its height contained three-times in the total length, head four and a-half times in the same, diameter of the eye one-fourth of the length of the head; teeth with three points; præoperculum scaly; operculum naked, except on its upper external portion. The soft dorsal fin is higher than the spinous. Colour in dried specimen uniform light brown, with the lower parts more yellow.

Port Phillip. Four inches and a-half in length.

235. GIRELLA ELEVATA, *n. sp.*

" *The Drummer.*"

D. 13/12. A. 3/10.

Height of body more than a third of the total length; length of head one-fifth. Teeth tricuspid, the middle cusp large and rounded, a few conical looking teeth on the side of the intermaxillary bone behind. Scales large except on the occiput; dorsal spines strong, shorter than the rays; anal spines strong, gradually increasing in length, but much shorter than the rays. Tail large, slightly emarginate; pectoral fins about as long as the head. Uniform brown.

Port Jackson.

236. GIRELLA CYANEA, *n. sp.*

"*Blue Fish.*"

D. 15/12. A. 3/10.

Height of body three times and two-thirds in the total length, head nearly one-fifth; teeth evenly tricuspid, smaller ones on the sides, spinous and soft dorsal of about equal height; the second anal spine stronger and a little shorter than the third; tail strongly forked. Colour deep blue.

237. GIRELLA RAMSAYI, *n. sp.*

D. 15/12. A. 2/12.

Height of body three times and a-half in the total length; length of head five times. Eye large. Forhead broad, smooth, very slightly convex and more than twice the diameter of the orbit; length of snout twice the diameter of the orbit. Teeth small, tricuspid, none on the vomer. Upper lip fleshy, the maxillary entirely covered by the præorbital when the mouth is shut, and reaching to the vertical from the first nostril; the præorbital is a little emarginate in front. Scales rather large; those on the cheek very minute, and on the throat and chest entirely embedded in the skin. Dorsal fin nearly even throughout; the second spine of the anal very strong, more than twice the length of the first, and much shorter than the rays; tail considerably emarginated. Coloration slaty-brown above and on the sides, white on the belly; muzzle, chin, and round the eyes bright yellow. Length eighteen inches.

Port Jackson.

Genus TEPHRÆOPS, Gunth.

Like *Girella,* but with very small scales.

238. TEPHRÆOPS RICHARDSONI, Gunth.

Gunth. Cat. Fishes, I., p. 432.
Crenidens tephræops, Richards, Voy. Erebus and Terror, p. 69, pl. 41, fig. 1.

D. 14/13. A. 3/11.

In front of the jaws a single series of tricuspid teeth, separated from the broad posterior band of smaller ones by a groove; anal fin rather elevated, the second ray being four-fifths of the length of the head. Uniform blackish.

King George's Sound.

Genus NEOTEPHRÆOPS, Casteln.

Like *Tephræops,* but with the operculum as well as the præoperculum covered with scales.

Australian Seas.

239. NEOTEPHRÆOPS ZEBRA, Richards.

Crenidens zebra, Richards, Erebus and Terror, Fishes, p. 70.
Tephræops zebra, Gunth., Cat. Fishes, I., p. 432.
Neotephræops zebra, Casteln., Proc. Zool. Soc., Vict., Vol. I., p. 69.

D. 14/13. A. 3/12. L. lat. 79. L. transv. 61.

Body oval; the height about three and a-third times in the total length, the head nearly five times in the same. Coloration dark grey or black, with nine broad darker bars descending from the back.

King George's Sound.

Genus HAPLODACTYLUS, Cuv. & Val.

In both jaws series of flat and generally tricuspid teeth, behind which is a band of small cardiform teeth ; vomerine teeth. Cheeks and opercles scaly. Two elongate dorsal fins ; anal short ; the lower pectoral rays simple. Scales very small. Five or six branchiostegals, pyloric appendages in small number. Air-bladder simple.

Southern Pacific.

240. HAPLODACTYLUS ARCTIDENS, Richards.

Gunth. Cat. Fishes I., p. 335.

D. 16. 1/18. A. 3/7. Cæc. pylor. 4. Vert. 16/18. ?

Incisors lanceolate without distinct lobes in old age. Six simple pectoral rays, Uniform brownish.

Port Arthur, Tasmania.

241. HAPLODACTYLUS LOPHODON, Gunth.

B. 5. D. 17/20. A. 3/6. L. lat. 78.

Each incisor with a terminal lobe and two lateral lobes on each side. Six simple pectoral rays. Brown : operculum with a black spot behind ; caudal and anal fins variegated with lighter.

Coast of New South Wales. Port Jackson.

242. HAPLODACTYLUS OBSCURUS, Casteln.

Proc. Linn. Soc. N. S. Wales, Vol. III., p. 374.

Port Jackson.

2. *Molar lateral teeth in the jaws. Carnivorous.*

Genus LETHRINUS, Cuv.

Cheeks naked. Cardiform teeth in front of the jaws with the addition of canines, lateral teeth in a single series—conical, or conical and molar-like, or obtuse molars. Scales moderate. Six branchiostegals. Air-bladder generally notched posteriorly, and with short lateral appendages.

Indian and Australian Seas.

243. LETHRINUS NEMATACANTHUS, Bleek.

Gunth. Cat. Fishes I., p. 456.—Bleek. Atl. Ichth. Perc., pl. 39, f. 3.

D. 10/9. A. 3/8. L. lat. 48.

The height of the body is nearly four times in the total length, the length of the head four times to three and three-quarters; the snout is slightly elongate and pointed; the diameter of the eye is once and a-half in the length of the snout. The maxillary bone reaches to or nearly to the vertical from the anterior margin of the eye. Canine teeth moderate, the lateral teeth conical. Dorsal spines slender: the second longest, flexible, longer than the longest ray and than half the length of the head. Tail slightly emarginate. Olive, shining-golden, with four or five orange-coloured longitudinal bands, head and body with indistinct and irregular brownish spots, a blackish blotch between the pectoral fin and the lateral line; spines and rays of the fins (except the pectoral) with brownish spots.

North-east Coast. Percy Islands. Port Jackson. (Macl. Mus.)

244. LETHRINUS CHRYSOSTOMUS, Richards.

Voy. Erebus and Terror Fishes. pl. 60, f. 6-7.—Gunth. Cat. Fishes I., p. 457.

D. 10/9. A. 3/8. L. lat. 48. L. transv. 5/16.

The height of the body is three times in the total length, the length of the head three and a-quarter. The snout is elongate and pointed, and the eye, in adult specimens, of rather small size, its diameter being less than the distance between the eyes, or nearly one-third of the length of the snout. The maxillary bone reaches to the vertical from the posterior nostril. Canine teeth rather strong; the lateral teeth conical and pointed. Dorsal spines moderate; the third rather shorter than the longest ray, and three times and a-half in the length of the head. Olive; each scale of the back and sides with a black vertical streak at its base; head, and dorsal, caudal, anal and ventral fins blackish-brown; the caudal variegated with lighter.

Norfolk Island, Cape York, Percy Islands, &c.

245. LETHRINUS RICHARDSONII, Gunth.

Gunth. Cat. Fishes I., p. 458.

Lethrinus hæmatopterus, Bleek, Atl. Ichth. Perc., pl. 53, fig. 4.

D. 10/9. A. 3/8. L. lat. 48. L. transv. 5/17.

The height of the body is three times to three and a-half in the total length, the length of the head three and a-half times. The snout is slightly elongate and pointed; the diameter of the eye is rather more than the width between the orbits, and once and a-half to once and two-thirds in the length of the snout. The maxillary reaches to the vertical from the anterior nostril. Canine teeth rather small, those of the lateral series conical, none molar-like. Dorsal and anal spines rather stout, the fourth and fifth dorsal longest, but shorter than the rays and about twice and a-half in the length of the head. Caudal fin emarginate. Brownish-olive (in spirits) indistinctly marked with darker, a black roundish blotch between the lateral line and the pectoral fin. (These markings are not represented in Dr. Bleeker's figure).

Cape York (Gunther).

246. LETHRINUS LATICAUDIS, All. & Macl.

Proc. Linn. Soc. N.S. Wales, Vol. I., p. 276, pl. 8, fig. 2.

Percy Islands (Chevert Exp.)

247. LETHRINUS PAPUENSIS, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 276, pl. 8, fig. 1.

South Coast of New Guinea (Chevert Exp.)

248. LETHRINUS FUSCICEPS, Macl.

Proc. Linn. Soc. N. S. Wales, Vol. II., p. 350, pl. 8, fig. 1.

Port Darwin.

249. LETHRINUS PUNCTULATUS, Macl.

Proc. Linn. Soc. N. S. Wales, Vol. II., p. 351, pl. 8, fig. 2.

Port Darwin.

250. LETHRINUS HARAK, Forsk.

Gunth. Cat. Fishes I., p. 458.—Bleek. Atl. Ichth. Perc., pl. 49, f. 3.

D. 10/9. A. 3/8. L. lat. 47. L. transv. 6/14.

The height of the body is three times and a-half in the total length, the length of the head four times; the snout moderately elongate and pointed. The diameter of the eye is greater than the distance between the eyes, and once and three-fourths in the length of the snout. There is a slight protuberance before the upper anterior angle of the eye; the maxillary reaches to the vertical from the anterior nostril. Canine and molar teeth moderate. Dorsal spines rather feeble; the fourth, longest, rather shorter than the highest ray and twice and three-fourths in the length of the head. Caudal fin slightly emarginate. Greenish-olive, with an oblong lateral blotch of a blackish colour below the lateral line and below the middle of the dorsal fin.

Sydney (Kner, Fishes of the Novara).

251. LETHRINUS COCOSENSIS, Bleek.

Gunth. Cat. Fishes I., p. 59.—Bleek. Atl. Ichth. Perc., pl. 18, f. 1.

L. sordidus and *fasciatus*, Cuv. & Val.

D. 10/9. A. 3/8. L. lat. 50.

Height of body four times in the total length, the length of of the head three times and five-sixths. The diameter of the eye is thrice and a-half in the length of the head, and more than the distance between the eyes. The snout is longer than the eye, and the maxillary does not reach to the vertical from the anterior margin of the eye. The posterior teeth are molars; canines moderate. The fifth dorsal spine longest, one-third shorter than the height of the body and shorter than the rays. Caudal fin forked with pointed lobes. Olive, with reddish or orange coloured longitudinal bands and with four or five five brown transverse ones. Fins immaculate, reddish-yellow, the spinous dorsal brown-edged

New Holland (Kner. Fish. Novara).

252. LETHRINUS GLYPHODON, Gunth.

Gunth. Cat. Fishes I., p. 462.—Castelnau, Proc. Linn. Soc. N.S. Wales, Vol. III., p. 372.

Port Jackson.

Genus NEOLETHRINUS, Casteln.

Like *Lethrinus,* but with the palate and all the inside of the mouth, covered with small molar teeth.

253. NEOLETHRINUS SIMILIS, Casteln.

Castelnau, Researches on the Fishes of Australia, p. 12.

D. 10/9. A. 3/8. L. lat. 52.

The height of the body is equal to the length of the head, and is contained twice and two-thirds in the length (caudal excluded). The eye is about three times and a-third in the length of the head, the mouth is rather extensible and pointed, with the cleft oblique. The caudal fin is bilobed. The general colour is grey, the head rather purple with ocellated round white spots on the cheeks; there is a large square, obscure spot on most of the scales at the back; on the lower part of the body there are traces of two or three slight longitudinal stripes of a yellow tinge; throat white, fins transparent, rather yellow; membranes of the dorsal rather nebulous. Length four inches.

Cape York.

Genus SPHÆRODON, Rupp.

Jaws with several conical canine-like teeth in front, and with a single series of molars on the sides. Cheeks scaly. Dorsal fin with ten spines, which can be received in a groove. Scales moderate. Six branchiostegals. Pyloric appendages in small number.

Indian and Australian Seas.

254. SPHÆRODON GRANDOCULIS, Rupp.

Gunth. Cat. Fishes I., p. 465.—Mus. Godeff. Journ. Heft 7, p. 67.
SYN.—*Sphærodon heterodon*, Bleek., *Lethrinus latidens*, C. & V.
Sphærodon latidens, Kner., Fishes of Novara, p. 83, pl. 4, fig. 1.
D. 10/10. A. 3/9. L. lat. 46. L. transv. 5/16. Cæc. pylor. 3.
Vert. 10/14.

Eyes large. The dorsal spines equal on both sides, the third anal spine longest; the spinous dorsal with two series of bluish spots, some of the rays of the dorsal and anal fins with a black spot behind their base.

New Holland (Kner, Fishes of Novara).

Genus PAGRUS, Cuv.

Similar pairs of strong, conical, canine like teeth in the outer series of both the jaws; molars in two series. Cheeks scaly. The spines of the dorsal are sometimes elongate, and can be received in a groove. Scales moderate. Six branchiostegals. Pyloric appendages in small number. Air-bladder simple.

All Seas.

255. PAGRUS UNICOLOR, Cuv. & Val.

Gunth. Cat. Fishes I., p. 468.
Schnapper of the Fishermen.
D. 12/10. A. 3/8. L. lat. 52. L. trans. 8/17. Cæc. pylor. 5.

The height of the body is twice and two-thirds in the total length, the length of the head thrice and a-half; the diameter of the eye equals the distance between the eyes, and is once and a-third in the length of the snout; a slight protuberance above the upper anterior angle of the eye; the præorbital is one and two-third times as long as high; there are six or seven series of scales on the præoperculum. Dorsal spines not elongate; the second anal spine rather longer but not stronger than the third, one-third of the length of the head; the pectoral reaches to the third anal spine. Silvery; back darker with silvery specks, sometimes disappearing in preserved specimens.

All Australian Seas.

256. PAGRUS MAJOR, Temm.

Gunth. Cat. Fishes I., p. 470.

D. 12/10. A. 3/8. L. lat. 55. L. transv. 7/15.

The distance between the eyes equals their diameter, which is once and a-half in the length of the snout. The præorbital is once and one-third as long as high, a slight protuberance before the upper anterior angle of the eye. Limb of præoperculum naked. Dorsal spines moderate, slightly compressed on one side, the fourth longest; the second anal spine rather stronger but not longer than the third, which is one-third of the length of the head. Molars small in two series, sometimes with a third of rudimentary teeth. Uniform reddish.

West Coast of Australia.

Genus CHRYSOPHRYS, Cuv.

Four or six conical canine teeth and three or more series of rounded molar teeth in both jaws. Cheeks scaly. The spines of the dorsal can be received in a groove. Scales moderate. Six branchiostegals; pyloric appendages in small number; air-bladder sometimes notched or with very short appendages.

All Seas.

257. CHRYSOPHRYS SARBA, Forsk.,

Gunther Cat. Fishes I., p. 188.

"*Tarwhine*" of the Fishermen.

D. 11/12-13. A. 3/11. L. lat. 55. L. transv. 7/14.

The height of the body is twice and two-thirds in the total length, the length of the head four times; the distance between the eyes is rather more than their diameter, which is once and two-thirds in the length of the snout. The præorbital is once and a-third as long as high; a slight protuberance above the upper anterior angle of the eye. Incisors broad, obtuse; the molars in great number forming four series in both jaws, a large ovate molar behind. Dorsal spines moderate, rather compressed, broader on one side, the fourth longest; the second and third anal spines nearly equal, twice and three-quarters in the length of the head. Silvery, with about fourteen indistinct longitudinal streaks in preserved specimens.

Port Jackson.

258. CHRYSOPHRYS HASTA, Bl.

Gunth. Cat. Fishes I., p. 490.—Bleek. Atl. Ichth. Perc., pl. 67, f. 3.

D. 11-12/10. A. 3/8-9. L. lat. 42-45. L. transv. 4-5/11.

The height of the body is twice and two-thirds in the total length, the length of the head thrice and two-thirds. In adults the eye is once and three-quarters in the width of the forehead and twice in the length of the snout. The præorbital is twice as long as high and is notched to receive the extremity of the maxillary bone. Incisors conical, pointed, of moderate strength, molars in great number, above in four or five series, beneath in three or four. Dorsal spines strong, compressed, broader on one side, the fourth longest, once and a-half in the length of the head. Operculum with a rather prominent spine. Silvery, anal fin blackish, dorsal edged with blackish.

Port Darwin.

259. CHRYSOPHRYS AUSTRALIS, Gunth.

Gunth. Cat. Fishes I., p. 494, pl. 28, fig. B.

"*Black Bream*" of the Sydney Market.

D. 11/10-11. A. 3/8. L. lat. 44-45. L. transv. 5/13.

The height of the body is nearly one-third of the total length, the length of the head one-fourth. The diameter of the eye is four times and two-thirds in the latter, and one and a-half in the length of the snout. Molars in four series in the upper, and three in the lower jaw, the posterior ones largest. The præorbital is rather lower than the orbit. There are five series of scales between the præorbital and the angle of the præoperculum. Dorsal spines strong, the fourth longest, nearly half the length of the head. The second anal spine is very strong, equal in length to the fourth of the dorsal. Silvery, with shining golden longitudinal streaks, edge of the spinous dorsal and axil black.

Port Jackson, Port Phillip &c.

FAMILY VI. HOPLOGNATHIDÆ.

Perciform Fishes, with the teeth of the jaws confluent into a cutting lamella.

Genus HOPLOGNATHUS, Richards.

The spinous dorsal with twelve spines, the soft dorsal and anal fins rather elevated ; vertical fins scaly on the basal portion.

Indian and Australian Seas.

260. HOPLOGNATHUS CONWAYII, Richards.

Gunth. Cat. Fishes III., p. 357.

D. 12/12. A. 3/12.

The length of the fifth and sixth dorsal spines is three times and a-third in the length of the head.

Australia ? (Gunther).

FAMILY VII. CIRRHITIDÆ.

Perciform fishes with the lower pectoral rays not branched, and with neither trenchant nor molar teeth in the jaws.

Genus NEOCIRRHITES, Casteln.

Almost identical with Bleeker's genus *Cirrhilichthys*, but with no canine teeth in the upper jaw. The lower jaw is crowded with small villiform teeth, with the canines strong and curved backwards. Six simple pectoral rays. Teeth on the palate; præoperculum armed.

261. NEOCIRRHITES ARMATUS, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 101.

D. 10/13. A. 3/? L. lat. 43. L. transv. 16.

Form broad, oval, compressed, upper profile very convex; height a little over twice and a third in the total length of the fish; head four times in the same; eye twice and a-half in the length of the head, upper jaw a little longer than the lower. Cheeks scaly, præoperculum with a series of rather long spines at the angle. Operculum with a notch behind and covering the base of the pectorals, the suprascapula serrated. Scales rather large. Dorsal spines about equal, excepting the first which is short; the second anal spine rather longer than the third; the simple rays of the pectorals are thick and longer than the others, extending to the extremity of the ventrals. The dorsal fin is received in a scaly sheath in which the spines lay alternately, forming two rows. The colour is a light yellowish brown with the back darker. Length two inches.

Knob Island, Torres Straits.

Genus CHIRONEMUS, Cuv. & Val.

Six or seven lower pectoral rays simple; dorsal fin with fifteen spines. Villiform teeth in both jaws, without canines; teeth on the vomer, none on the palatines. Six branchiostegals. Præoperculum entire; operculum with points. Scales moderate. Air-bladder none; pyloric appendages in small number.

Australian Seas.

262. CHIRONEMUS GEORGIANUS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 76.

D. 15/16. A. 3/7. Cæc. pylor. 4.

Seven simple pectoral rays, the base of the soft dorsal half as long as that of the spinous.

King George's Sound.

263. CHIRONEMUS MARMORATUS, Gunth.

Gunth. Cat. Fishes II., p. 76.

D. 14. 1/18. A. 3/6. L. lat. 55.

Six simple pectoral rays; the base of the soft dorsal rather shorter than that of the spinous; the fifth dorsal spine longest. Yellowish, largely marbled with dark brown; the spinous dorsal blackish, the other fins spotted with brown.

Western Australia, Darnley Island, Port Jackson.

264. CHIRONEMUS MACULOSUS, Richards.

Threpterius maculosus, Richards, Proc. Zool. Soc., 1850, p. 70, pl. 2, fig. 1-2.

Chironemus maculosus, Gunth., Cat. Fishes II., p. 78.

D. 14/18. A. 3/7. L. lat. 52.

The length of the base of the soft dorsal fin is two-thirds of that of the spinous. Seven simple pectoral rays; præorbital narrow; membrane between the dorsal spines deeply notched, and produced into a small free lobe behind each spine. Pale brown: head, body, and the soft dorsal, caudal and anal fins spotted with blackish.

King George's Sound.

Genus CHILODACTYLUS, Cuv.

One dorsal fin with sixteen to nineteen spines; the anal fin of moderate length; the caudal forked; one of the simple pectoral rays more or less exceeding the fin in length. Teeth in villiform bands, no canines, no teeth on the vomer or palatine bones. Præorbital and præoperculum entire. Scales moderate. Cheeks scaly. Six or five branchiostegals. Air-bladder with many lobes generally; pyloric appendages in small number.

Temperate regions of the Pacific. South Africa.

265. CHILODACTYLUS VITTATUS, Garrett.

Gunth. Jour. Mus. Godeff. Heft. 7, p. 73, pl. 51, fig. B.

Zeodrius vittatus, Castel., Proc. Linn. Soc. N.S. Wales, Vol. III., p. 377.

Port Jackson.

Count Castelnau's species from Sydney is evidently the same as Gunther's from the Sandwich Islands, the only disparity being in Castelnau's describing the dorsal fin as having only one short spine in front of the long one, which is clearly a mistake.

266. CHILODACTYLUS CARPONEMUS, Cuv. & Val.

Gunth. Cat. Fishes II., p. 78.

B. 6. D. 17/31. A. 3/19. Cæc. pylor. 2.

Seven rays of the pectoral simple, the longest reaching nearly to the end of the anal, and one-third of the total length. Dorsal fin scarcely notched. Coloration uniform, the caudal fin with blackish tips.

South Australia.

267. CHILODACTYLUS MACROPTERUS, Richards.

Gunth. Cat. Fishes, II., p. 78.

"*Morwong*" of the Sydney Fishermen.

D. 17/26. A. 3/14. L. lat. 55. L. transv. 6/17.

Six simple pectoral rays, the uppermost very elongate, reaching to the fourth soft ray of the anal; dorsal fin notched, the seventh spine longest, higher than the soft dorsal, and one half the length of the head; the second anal spine strong, and longer than the third. A blackish band from the origin of the dorsal to the shoulder and the base of the pectoral.

Port Jackson, Tasmania, Port Phillip.

268. CHILODACTYLUS ASPERSUS, Richards.

Ann. and Mag. Nat. Hist. 1851, Vol. VII, p. 230.—Gunth. Cat. Fishes II., p. 79.

D. 18/27. A. 3/11. L. lat. 55-57. L. transv. 6/15.

Six simple pectoral rays, the uppermost very elongate, reaching beyond the origin of the soft anal. The spines of the fins are strong, the fifth of the dorsal longest, higher than the soft dorsal and twice and four-fifths in the length of the head. Brownish with scattered black specks.

Tasmania.

269. CHILODACTYLUS NIGRICANS, Richards.

Ann. and Mag. Nat. Hist. 1851, Vol. VII., p. 279.—Gunth. Cat. Fishes II., p. 79.

D. 15/26. A. 3/10. L. lat. 48.

Five simple pectoral rays; the uppermost longest, projecting only about one-sixth of its length beyond the membrane; the sixth dorsal spine is the longest, equals one-third of the height of the body, and is higher than the soft rays, which rise considerably above the posterior spines. Uniform blackish-grey.

King George's Sound.

270. CHILODACTYLUS NIGRIPES, Richards.

Ann. and Mag. Nat. Hist. 1851, Vol. VII., p. 381.—Gunth. Cat. Fishes II., p. 82.

D. 18/26. A. 3/10. L. lat. 61.

Five simple pectoral rays, the second longest, not reaching the vent, and projecting about a third of its length beyond the membrane. Dorsal fin notched, the fifth and longest spine is more than one-third the height of the body. An eminence above the upper angle of the orbit. Fins black.

King George's Sound.

271. CHILODACTYLUS GIBBOSUS, Richards.

Gunth. Cat. Fishes II., p. 84.

D. 17/33. A. 3/9. L. lat. 63.

Five simple pectoral rays of moderate length, the second and third longest. Dorsal fin slightly notched, the fourth and fifth spines elongate, the former equal to the length of the head, in old specimens a pair of horns on the forehead, and a pair of bony tubercles on the snout. A blackish longitudinal band between the dorsal and the lateral line.

West Australia, Tasmania, Port Phillip.

272. CHILODACTYLUS SPECTABILIS, Hutton.

Fishes of New Zealand, p. 8, 1872.

Chilodactylus Allporti, Gunth., Ann. Nat. Hist. 1872, Vol. X., p. 184.

Chilodactylus rubrofasciatus, Casteln., Proc. Linn. Soc. N.S. Wales Vol. III., p. 140.

D. 17/26. A. 3/9. L. lat. 55. L. transv. 5/16.

Total length about four and a-quarter times the length of the head, and rather more than three times the height of the body. Six simple pectoral rays, the upper one the longest, not so long as the head, and not extending to the end of the ventrals, the others graduated. Dorsal deeply notched, the fourth, fifth, and sixth spines about equal and longest, rather more than one-third of the length of the head. Back and sides yellowish-orange, with six transverse bands of reddish orange; belly yellowish white, dorsal fin blackish.

Tasmania, Port Phillip.

273. CHILODACTYLUS FUSCUS, Casteln.

Proc. Linn. Soc. N.S. Wales, Vol. III., p. 376.

The "*Carp*" of the Sydney Fishermen.

Port Jackson.

274. CHILODACTYLUS ANNULARIS, Casteln.

Proc. Linn. Soc., N. S. Wales, Vol. III., p. 377.

Port Jackson.

Genus NEMODACTYLUS, Richards.

One dorsal fin with seventeen spines; the anal of moderate length, the caudal forked; one of the simple pectoral rays elongate. A single series of minute teeth in the jaws; no other teeth. Præorbital and præoperculum entire. Scales thin, cycloid, of moderate size. Cheeks naked. Three branchiostegals. Pyloric appendages in small number.

Tasmania.

275. NEMADACTYLUS CONCINNUS, Richards.

Trans. Zool. Soc. III., p. 116, pl. 4, f. 2.—Gunth. Cat. Fishes II., p. 85.

D. 17/28. A. 3/15. L. lat. 50. Cæc. pylor. 4. Vert. 34.

Coloration uniform. The longest simple pectoral ray projects nearly one-fourth of its length beyond the membrane.

Port Arthur, Tasmania.

Genus LATRIS, Richards.

Dorsal fin deeply notched, with seventeen spines; anal elongate; none of the simple rays of the pectoral elongate. Teeth villiform in both jaws; no canines. Præorbital entire; præoperculum minutely ciliated. Scales small. Cheeks scaly. Six branchiostegals. Pyloric appendages in small number.

Australia and New Zealand.

276. LATIRIS HECATEIA, Richards.

Trans. Zool. Soc. III., p. 106, pl. 6, f. 1.—Gunth. Cat. Fish. II., p. 86.

Hobart Town "Trumpeter."

D. 18/36. A. 3/27. V. 1/4. L. lat. 110. Cæc. pylor. 4. Vert. 14/20.

The length of the head is one-fourth of the total, the lower nine pectoral rays simple. Vomerine teeth. Back and sides brown, with four straight whitish longitudinal bands.

Tasmania, Port Phillip.

277. LATRIS CILIARIS, Forst.

Rich. Ereb. & Terr., p. 37, pl. 26, f. 6-7.—Gunth. Cat. Fishes II., p. 86.

D. 17/39. A. 3/32. L. lat. 84.

The length of the head is one-fifth of the total; six simple pectoral rays. Vomerine teeth none.

Port Jackson.

278. LATRIS FORSTERI, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 77.

The "*Bastard Trumpeter*" of the Melbourne Fishermen.

D. 17/40. A. 2/38. L. lat. 120.

Height of body not quite three-times in the total length, head four times and a-half in the same, eye four times and a-half in the length of the head. Form, a regular oval; top of head and snout without scales; the fourth and fifth dorsal spines longest. Caudal fin strongly forked; ventrals small, placed considerably behind the pectorals. Head yellow in front and green behind the eyes, with the sides purple, the mouth and throat are of a fine pink, the back light purplish blue, with numerous narrow longitudinal golden bands, the lower parts of the body whitish-pink. The dorsal fin is reddish with a darker margin, the anal similar; the caudal and ventrals are rather dark coloured, pectorals yellowish. Eyes orange.

Port Phillip. Gippsland Coast.

279. LATRIS BILINEATA, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 79.

D. 15/41. A. 2/35.

Form and proportions the same as in *L. Forsteri*, the fourth anal ray prolonged into a filament. Colour silvery with the back blue; two longitudinal broad golden bands on the sides; towards the middle of the height there is a longitudinal impression like a second lateral line, the inside of the mouth and throat are black.

From Western Port. Length seven inches.

280. LATRIS INORNATA, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 79.

D. 16. 1/40. C. 15. P. 19.

Profile oval; height of body three times and one-third in the total length, the head four times and one-third. The spinous dorsal higher than the soft, the fifth, sixth and seventh spines being the longest; caudal fin strongly forked; general colour bluish silvery-white, with the back and upper part of the head a deep blue black, which extends to the lateral line, where it ceases at once without any graduation or shade; at this line there is a yellow tinge; the dorsal fins have a black border, the caudal is black with a yellow margin; the anal is white with its base pink, and a small black spot on its anterior angle; ventrals whitish; pectorals yellowish-green with the base dark. Eye silvery with a bluish tinge; a black spot on the upper part of the operculum.

Western Port. Length six and a-half inches.

Genus LACEPEDIA, Casteln.

Præoperculum strongly serrated, operculum with a strong point. Teeth numerous and cardiform in the jaws with canines, teeth on the vomer and palatine bones. One dorsal. Fins scaly, pectorals large, some of the rays simple.

281. LACEPEDIA CATAPHRACTA, Casteln.

Proc. Zool. Soc., Victoria, Vol. II., p. 43.

D. 11/22. A. 3/10. L. lat. 56. L. transv. 28.

Form rather high and convex above, mouth oblique, the lower jaw longest; head covered with elevated scales; scales moderately large and triangular looking. Spinous dorsal low and even; the third anal spine the longest. Caudal bilobed; ventrals inserted below the pectorals; the pectoral rays are thick, and only the two lowest simple. The height of the body is twice and a-third in the length without the caudal, the head three times and a quarter in the same; and the eye is a little over one-fourth of the length of the head. Colour in a dried state, uniform light yellowish-brown.

Described from one injured specimen about seven inches in length.

FAMILY VIII. SCORPÆNIDÆ.

Perciform fishes with a bony stay for the angle of the præoperculum, which is armed; the bone arising from the infraorbital ring. Body with or without scales.

Genus SEBASTES, Cuv. & Val.

Head and body compressed, above scaly, to or beyond the orbits, *without groove on the occiput*, generally with a few small spines; præoperculum armed; body covered with scales of moderate or small size; no skinny appendages. Fins not elongate; one dorsal, separated by a notch into a spinous and soft portion, with twelve or thirteen spines; anal fin with three. No pectoral appendages. Villiform teeth in the jaws, on the vomer and generally on the palatine bones. Seven branchiostegals. Air-bladder mostly present; pyloric appendages in moderate or small number.

In nearly all seas.

282. SEBASTES PERCOIDES, Richards.

Voy. Ereb. and Terr. Fishes, p. 23, pl. 15, f. 1-2.—Gunth. Cat. Fishes II., p. 101.

D. 11. 1/12. A. 3/5. L. lat. 60-65.

The height of the body is three times and a-half in the total length, the length of the head three and a-fifth. Interorbital space concave, with two ridges, narrow, its width being one-ninth of the length of the head. The snout is shorter than the diameter of the eye, which is three times and one-third in the length of the head. Vertex with prominent spines. Tongue free anteriorly, the maxillary reaches behind the vertical from the centre of the eye. The third and fourth dorsal spines are the longest, twice and a-half in the length of the head and longer than the anal spines. Reddish, with five brown cross-bands; pharynx black.

Tasmania, Port Phillip, Port Jackson.

283. SEBASTES ALLPORTI, Casteln.

Proc. Zool. Soc., Victoria, Vol. I., p. 40.

Very much like *S. percoides*, and believed by Dr. Gunther to be identical. Form more elongate, the height being four times in the length, the head less than three times in the same; the lower jaw longer than the upper, the spines of the præoperculum very strong and sharp; the spines on the vertex very small, almost wanting; the scales of the body smaller than in *S. percoides;* the dorsal fin lower, the third spine longest; and the soft dorsal is more equal. Colour orange marbled with brown, and with brown bands; the dorsal fin is black, the soft portion bordered with white; a broad dark band across the tail; the ventrals and pectorals bright orange, the latter with a broad transverse band.

Hobson's Bay. Tasmania.

Genus SCORPÆNA, Art.

Head large, slightly compressed, *with a naked groove on the occiput,* armed with spines and sometimes with skinny flaps. Scales moderate or small; body generally with skinny appendages. Dorsal fin more or less deeply notched; ventrals thoracic; pectorals large, rounded, no appendages. Villiform teeth in the jaws and on the vomer, generally on the palatines also. Seven branchiostegals. Air-bladder none; pyloric appendages in moderate number.

All temperate and tropical seas.

284. SCORPÆNA CRUENTA, Richards.

Gunth. Cat. Fishes II., p. 112.

Scorpæna Militaris, Richards, Voy. Erebus and Terror, p. 22, pl. 14, f. 1-2.

The "*Red Rock Cod.*"

D. 11. 1/10. A. 3/5. L. lat. 45.

The height of the body about equals the length of the head, and is three and a-half times in the total. Head almost without scales. The length of the snout is one-fourth of that of the head, the width between the eyes one sixth; a shallow quadrangular groove on the occiput surrounded by very prominent spines;

orbital tentacles moderate. The third dorsal spine equals the second anal, and is more than half the length of the head. Of a beautiful scarlet colour, sometimes marbled with grey, belly whitish; sides with rounded dark blotches; fins reddish-pink, variegated with white; the spinous dorsal has a large black blotch covering the upper half of its posterior portion, the soft dorsal is thinly spotted, and transversely marked with white and red; the ventrals are pink; the pectorals marbled with pink, white, and brown.

Tasmania, Port Phillip, Port Jackson.

285. SCORPÆNA BYNÆNSIS, Richards.

Voy. Erebus and Terror, Fishes, p. 22, pl. 14, f. 3-4.—Gunth. Cat. Fishes, II., p. 113.

D. 11. 1/8-11. A. 3/5. L. lat. 45.

The height of the body is three times and a-half in the total length, the length of the head three and a-quarter. Head without scales except on the upper parts of the cheek and operculum. The length of the snout is one-fourth, and the space between the eyes one-sixth of the length of the head. The space between the eyes is deeply concave, but the ridges are inconspicuous and do not terminate in a spine posteriorly. The groove on the vertex shallow, quadrangular, broader than long, and surrounded by very prominent spines; orbital tentacles moderate. The fourth and fifth dorsal spines longest, half the length of the head, and shorter than the strong second anal spine. Body and fins variegated with brownish and white.

Port Darwin, Darnley Island, Port Jackson.

286. SCORPÆNA CARDINALIS, Richards.

Ann. and Mag. Nat. Hist. 1842, Vol. IX., p. 212.—Gunth. Cat. Fishes II., p. 116.

D. 11. 1/9. A. 3/5. L. lat. 55.

The height of the body is three times and two-thirds in the total length, the length of the head three and a fifth. Cheeks and upper part of operculum with rudimentary scales. The space between the eyes exceedingly deep, with a central and two lateral ridges; its width is half the diameter of the eye, which is one-fifth of the length of the head. A slight groove below the eye; crown of the head with very strong, compressed, trenchant spines, and with a groove which is divided into a central and two lateral portions. Orbital tentacles sometimes present. The spinous dorsal as high as the soft; the third and fourth spines longest, and twice and a-half in the length of the head; the eleventh spine not half the length of the twelfth. The second anal spine strong with a longitudinal groove. Colour red, marbled and spotted with brown.

Port Jackson.

287. Scorpæna panda, Richards.

Ann. and Mag. Nat. Hist. 1842, IX., p. 216.—Voy. Erebus and Terror, pl. 41, f. 3-4.—Gunth. Cat. Fishes II., p. 117.

D. 12. 1/8. A. 3/5. L. lat. 67.

The anterior part of the spinous dorsal very high and the spines nearly free, the length of the third spine three-quarters that of the head; pectoral fin reaches to the middle of the anal; the interocular space is very deep, the cavity on the crown a narrow transverse furrow. Maxillary scaly. Head and back dotted with black; caudal fin with two broad blackish cross-bands.

King George's Sound.

288. Scorpæna sumptuosa, Casteln.

Researches on the Fishes of Australia, p. 17.

D. 10. 1/10. A. 3/5.

Palatine teeth strong, disposed in a transverse band, height of body three and a-half times in the total length, the head less than three times in the same; the groove between the eyes deep with three longitudinal ridges, spines of the head strong and compressed; the third dorsal spine longest; the second anal spine the longest, shorter than the rays. Coloration red, with conspicuous black spots, the fins, excepting the ventrals, more densely spotted.

Western Australia, perhaps a variety of *S. cardinalis.*

289. Scorpæna bellicosa, Casteln.

Researches on the Fishes of Australia, p. 17.

D. 11. 1/10. A. 3/5.

Height of the body less than the length of the head, and three times and a-quarter in the total length; head moderately scaled; the length of the snout is three times and two-thirds in the length of the head, and is a little more than the diameter of the eye; orbital tentacles very small; space between the eyes very deep, with two very prominent longitudinal ridges. Spines on the vertex and all the opercular bones. The spinous dorsal is rounded above, highest in the middle and is formed of strong arched spines of which the first is the shortest, and the fourth, fifth, and sixth the longest. Light brown, covered with large irregular marbled spots; the lower parts of an orange-red. Fins spotted with dark brown, but no black blotch on the spinous dorsal.

Nicol Bay. Queensland.

290. Scorpæna diabolus, Cuv. & Val.

Gunth. Cat. Fishes II., p. 117.

D. 11. 1/10. A. 3/5. L. lat. 44. Vert. 24.

Height of body three times and two-thirds in the total length, the length of the head twice and three-fourths. The upper portion of the operculum scaly. The length of the snout is one-third of that of the body; the width of the interorbital space is much more than the diameter of the eye, and four-times and three-quarters in the length of the head, the space is concave without ridges;

the vertex with a quadrangular groove, either square or broader than long, and with spines on each corner; a deep groove below the anterior angle of the orbit. No palatine teeth. The third and fourth dorsal spines longest, but shorter than the anal spines. Red, marbled with brown and bluish-white; pectoral fins spotted or banded with black anteriorly, caudal with brown cross-bands.

Port Darwin.

Genus GLYPTAUCHEN, Gunth.

Head and body compressed; crown of the head with a deep saddle-like impression. Scales very small. Præorbital, præoperculum and operculum armed. Dorsal fin continuous, the spinous portion much more developed than the soft; anal with three spines. No pectoral appendages. Villiform teeth in the jaws, on the vomer and palatine bones. Seven branchiostegals.

Australia, one species.

291. GLYPTAUCHEN PANDURATUS, Richards.

Proc. Zool. Soc. 1850, pl. 1, f. 3-4.—Gunth. Cat. Fishes II., p. 121.

D, 17/7. A. 3/6. V. 1/5.

The cleft of the mouth reaches to the vertical from the anterior margin of the eye; the seventh dorsal spine is the longest; the second anal is as long, but stouter than the third; the pectoral is very large and reaches nearly to the origin of the anal.

King George's Sound. Length five and a-half inches.

Genus PTEROIS, Cuv.

Head and body compressed, the former armed with spines on its upper surface and on the sides, and provided with skinny flaps; no groove on the occiput. Scales moderate or small. One dorsal fin deeply notched, anal short; the spines and rays of some of the fins very elongate and generally free, but branched; no pectoral appendages. Villiform teeth in the jaws and on the vomer, none on the palatine bones. Seven branchiostegals. Air bladder large; pyloric appendages in small number.

Indian and Australian Seas.

292. PTEROIS VOLITANS, Linn.

Gunth. Cat. Fishes II., p. 122.—Bleek. Atl. Ichth. Scorp., pl. 2, f. 3.

D. 12. 1/11. A. 3-2/6-7. L. lat. 90. Cæc. pylor. 3. Vert. 10/14.

Nape of neck naked; the space between the eyes very concave, its width being equal to the diameter of the eye, which is once and three-quarters in the length of the snout. The pectoral fins reach to or beyond the caudal fin. Red: snout, head, and the whole body with a great many narrow blackish cross streaks, all the rays of the vertical fins spotted; the spots on the pectoral and vertical fins larger and between the rays.

Torres Straits, Endeavour River, Port Jackson.

293. PTEROIS ZEBRA, Cuv. & Val.

Gunth. Cat. Fishes II., p. 126.—Bleek. Atl. Ichth. Scorp., pl. 1, f. 1.

D. 12. 1/10. A. 3/6. L. lat. 48-50. Cæc. pylor. 3.

Nape of neck scaly; the space between the eyes very concave, and much less than the diameter of the eye, which is once and a-quarter in the length of the snout. The upper and middle rays of the pectoral fin not, or slightly detached from one another, and not reaching to the caudal. The upper margin of the orbit with spines on the anterior and posterior angles only. Red: body with about six brown cross-bands, another across the opercles; cheeks spotted with brown. All the rays of the vertical fins black spotted; pectorals with semilunar blackish spots between the rays.

Port Jackson.

Genus CENTROPOGON, Gunth.

Head and body compressed, with distinct scales. No groove on the occiput. Præorbital and præoperculum spiniferous. One continuous dorsal fin with twelve or fifteen spines. No pectoral appendages. Villiform teeth in the jaws, on the vomer and the palatine bones. No cleft behind the fourth gill.

Australian and Indian Seas.

294. CENTROPOGON AUSTRALIS, White.

White, Voy. N.S. Wales, p. 266.—Gunth. Cat. Fishes II., p. 128.

D. 15/9. A. 3/5.

Scales very small; the pectoral fin reaches to the origin of the anal: the third dorsal spine is the longest, once and a-half in the length of the head; the second anal spine is longer than the third; the maxillary reaches to the vertical from the anterior margin of the eye. Brownish (in spirits), with five rather irregular dark cross-bands, the first from the origin of the dorsal, the fourth on the base of the caudal, the fifth across the tail.

Port Jackson.

295. CENTROPOGON ROBUSTUS, Gunth.

Gunth. Cat. Fishes II., p. 128.

D. 15/9. A. 3/5. L. lat. 85.,

Scales small; the pectoral fin does not reach to the vent; the fourth and fifth dorsal spines are the longest, their length being less than half that of the head; the second and third anal spines equal; the maxillary reaches to the vertical from the middle of the eye. Brownish, marbled and variegated with blackish.

Eastern Rivers of New South Wales.

296. CENTROPOGON ECHINATUS, *n. sp.*

D. 13/8. A. 3/5.

Body compressed, the height a little less than one-third of the total length. Head strongly armed, the space between the eyes less than the diameter of the orbit, the supraorbital ridge on each side with four sharp recumbent spines, one sharp spine beside the nostrils, a ridge of five similar spines from the præorbital to above the angle of the præoperculum—one at the angle, two on the operculum, a spiny ridge above the operculum and one of two or three spines on each side of the occiput. The maxillary bone reaches to the vertical from the middle of the eye. The scales on the lateral line mostly end in filaments; the second anal spine very large. Colour yellowish, densely blotched and marbled with brown, a light coloured band behind the dorsal and anal fins, followed by a brown one of the same size; root of the tail light-coloured and faintly spotted.

Endeavour River.

297. CENTROPOGON MARMORATUS, Gunth.

Ann. and Mag. Nat. Hist. 1863, Vol. XI., p. 136.

D. 16/9. A. 3/6. L. lat. 68.

The third to sixth dorsal spines are the longest, half as long as the head; the second anal spine longer and stronger than the third. Yellowish, marbled with brown. Length three inches.

Moreton Bay.

298. CENTROPOGON SCORPÆNOIDES, Guich.

Neosebastes scorpænoides, Guich., Mem. Soc. Imp. des Sc. Nat. Cherbourg.

Centropogon australis, Casteln., Proc. Zool. Soc. Vict., I., p. 81.

The "*Gurnet*" of the Melbourne Market.

Height of body four times in the total length, the head three times and a-quarter; the diameter of the eye is three times and one-third in the length of the head; mouth extensible. Brown, with the lower parts of the head and body scarlet; dorsal green with red spots; caudal similar, with its posterior half black; anal variegated with red, brown and greenish-white; pectorals above obscure, variegated with red, beneath white and spotted; ventrals white.

Coasts of Victoria, Port Phillip. Seventeen inches long.

I doubt this being a *Centropogon*, and I have never seen the characters of M. Guichenot's genus *Neosebastes*.

Genus HOLOXENUS, Gunth.

Body compressed, covered like the fins with loose skin, which is either finely granular or provided with minute scales. The greater part of the spinous dorsal forms a separate fin, some of the posterior spines being contiguous to the soft fin. Three anal spines. Caudal rounded. Pectoral rays simple, not prolonged or thickened. Eye small. Mouth of moderate width with bands of villiform teeth. Gill opening very wide. Four gills with a cleft behind the fourth. Pseudobranchiæ.

This is a genus of doubtful position. Dr. Gunther placed it with some doubt among the *Cirrhitidæ* and Dr. Bleeker among the *Scorpænidæ*. The affinity to the latter seems to me to be the greater.

299. HOLOXENUS CUTANEUS, Gunth.

Ann. and Mag. Nat. Hist. 1876, Vol. XVII., p. 393.

D. 7. 3/10. A. 9. C. 12. P. 11. V. 1/5.

The height of the body equals the length of the head, and is two-fifths of the total (without caudal). Head strongly compresed, with the small eye on the anterior half, not far below the upper profile, which is concave. Snout of moderate length; mouth oblique with the lower jaw somewhat prominent. Vertical fins high, the anterior dorsal with a subsemicircular outline, with pungent spines, the first inserted above the eye, the third and fourth longest. Caudal peduncle narrow. The pectoral and ventral fins extend to the anal; the ventral attached in its entire length to the abdomen. Uniform whitish (in spirits). Two specimens, the larger ten inches long.

Tasmania.

Genus PENTAROGE, Gunth.

Head and body compressed, without any scales, præorbital and præoperculum with strong spines. One dorsal fin with twelve or thirteen spines, anal with three. No pectoral appendages. Villiform teeth in the jaws, on the vomer, and the palatine bones. Air-bladder small; pyloric appendages in moderate number. A cleft behind the fourth gill.

Australian Seas.

300. PENTAROGE MARMORATA, Cuv. & Val.

Gunth. Cat. Fishes II., p. 132.

"*Fortescue*" of the Sydney Fishermen.

B. 7. D. 12-13/10. A. 3/6. Cæc. pylor. 6. Vert. 11/17.

The præorbital spine very long, dagger-shaped. Cleft of the mouth slightly oblique, with the maxillary reaching to the vertical from the centre of the eye. The dorsal begins on the neck. Dirty yellowish, largely marbled with brown.

Port Jackson.

Genus TETRAROGE, Gunth.

Like *Pentaroge*, but having generally a greater number of spines in the dorsal fin, and not having a cleft behind the fourth gill.

Indian and Australian Seas.

301. TETRAROGE DARNLEYENSIS, All. & Macl.

Proc. Linn. Soc. N. S. Wales, Vol. I., p. 278, pl. 6, fig. 1.

Darnley Island, in coral.

Genus Agriopus, Cuv. & Val.

Head and body compressed; the former without or with some small spines; præorbital spineless. Cleft of the mouth small; snout produced. Scales none. One dorsal with seventeen to twenty-one spines, beginning from the head; anal fin short; no pectoral appendages. Villiform teeth in the jaws, generally none on the vomer. Five branchiostegals. Air-bladder present; no pyloric appendages.

Cape Seas, Chilian Seas, South and West Australia.

302. Agriopus leuco-pæcilus, Richards.

Voy. Ereb. and Terr. Fishes, p. 60, pl. 37, f. 4-5.—Gunth. Cat. Fishes II., p. 137.

D. 17/13. A. 10.

The fourth and fifth dorsal spines are the longest, and shorter than the head. No spine before the orbit. Skin smooth. Largely marbled with black; some irregular whitish blotches along the lateral line.

South Australian Seas. King George's Sound.

Genus Aploactis, Temm.

Head and body compressed, covered with small prickles or filaments. Obtuse protuberances on the head. Some (from three to five) of the anterior dorsal spines forming an almost distinct division. No pectoral appendages. Teeth in the jaws, on the vomer and sometimes on the palatine bones. Five branchiostegals.

Seas of Japan, China, and Australia.

303. Aploactis Milesii, Richards.

Ann. and Mag. Nat. Hist. 1851, Vol. VIII., p. 275.—Gunth. Cat. Fishes II., p. 142.

D. 13-14/14. A. 12. C. 13. P. 11. V. 1/2.

Head with obtuse knobs, and blunt ridges, the dorsal fin begins over the orbit, the second spine the longest and nearly the length of the head, the fifth shortest. Dark brown, indistinctly marbled and mottled with purple and white, with a few pinkish marks some bands of small white spots on the tail.

King George's Sound, Port Jackson.

304. APLOACTIS SCHOMBURGHII, Casteln.

Aploactisoma Schomburghii, Castelnau, Proc. Zool. Soc. Vict., II., p, 64.

Count Castelnau formed the genus *Aploactisoma* for this species on account of its having teeth on the palatine bones, but it is scarcely worth preserving. The species differs from *A. Milesii* chiefly in the form of the dorsal fin, which is thus described by Castelnau : "The first dorsal is as high as the distance from the snout to the centre of the eye; it has five spines, the three first much longer and thicker than the others and placed near one another, the second longest; the fourth is much shorter and more remote, the fifth the smallest: there are thirteen spines and fifteen rays in all. Coloration much as in *Milesii*, with a black spot at the posterior angle of the soft dorsal, and a black border to the caudal and anal fins.

South Australia."

A Fish has been described by Bleeker under the name of *Paraploactes trachyderma* which perhaps ought to come in here as it is said to be Australian, but I have no knowledge of it or its description.

Genus SYNANCIDIUM, Müll.

Head irregularly formed, large ; scales none ; body and sometimes head and fins with skinny flaps. Dorsal fin with thirteen spines ; anal with five rays. Villiform teeth in the jaws and on the vomer, none on the palatine bones. Seven branchiostegals; air-bladder present, small pyloric appendages in small number.

Indian and Australian Seas.

305. SYNANCIDIUM HORRIDUM, Linn.

Gunth. Cat. Fishes II., p. 144.

D. 2. 11/6. A. 3/5. Cæc. pylor. 3. Vert. 10/14.

A very large and deep hemispheric groove on the cheek; crown of the head saddle shaped. Vomerine teeth. Dark brown, the fins with lighter bands.

Port Essington, Port Jackson.

FAMILY IX. TEUTHIDIDÆ.

Perciform Fishes with an outer and inner spine in the ventral fin.

Genus TEUTHIS, Linn.

Teeth small, denticulated, in a single series. Fins, dorsal 13/10; anal 7/9; V. 1/3/1. Scales minute. Five branchiostegals. Pseudobranchiæ well developed; air-bladder large, forked anteriorly and posteriorly. Intestinal tract with several circumvolutions; five or six pyloric appendages.

Herbivorous Fishes. Indian and Pacific Oceans.

306. TEUTHIS JAVUS, Linn.

Gunth. Cat. Fishes III., p. 315.

The height of the body is two-fifths of the total length; the length of the free portion of the tail is contained twice and three fifths in that of the head. Ground colour dark, the whitish spots are round on the back, oblong on the side, and confluent and forming longitudinal streaks on the belly, the spots and streaks are narrower than the interspaces of the ground colour. Head without streaks; vertical fins immaculate.

Hobson's Bay, Port Jackson.

307. TEUTHIS VERMICULATA, Cuv. & Val.

Gunth. Cat. Fishes III., p. 317.

The height of the body is contained twice and two-fifths in the total length. Brown, with vermiculated bluish lines on the head and the whole body, except the belly; caudal fin dotted all over with brown.

Trinity Bay (Chevert Exp.)

308. TEUTHIS TUMIFRONS, Cuv. & Val.

Gunth. Cat. Fishes III., p. 317.

The height of the body is contained thrice and a-half in the total length. Caudal fin emarginate. Snout rather broad, convex. Brown, dotted all over with whitish, the dots very small and extending on the dorsal and anal fins.

Sharks' Bay, West Australia.

309. TEUTHIS ALBOPUNCTATA, Schleg.

Gunth. Cat. Fishes, III., p. 318.

The height of the body is contained three times and a-half in the total length. Caudal fin emarginate. Ground colour brownish-olive, with scattered, small, roundish, whitish spots on the back and sides, which are smaller than the interspaces between. A dark brown blotch on the shoulder, less distinct in large specimens.

Cape Grenville (Chevert Exp.)

310. TEUTHIS NOTOSTICTA, Richards.

Ann. and Mag. Nat. Hist. 1853, XI., p. 172.—Gunther, Cat. Fishes III., p. 320.

The height of the body is rather more than one-third of the total length. Caudal fin subtruncate. Light brownish-olive (in a dried state), body with brown spots, which are smaller than the interspaces, and confluent on the back into short narrow vermiculated streaks.

Port Essington, Darnley Island (Chevert Exp.)

311. TEUTHIS NEBULOSA, Quoy & Gaim.

Gunth. Cat. Fishes III., p. 321.

The "*Black Trevally*" of the Sydney Fishermen.

The height of the body is one-third of the total length. Caudal fin deeply emarginate. Dorsal spines slender, the length of the fourth is less than the distance of the snout from the posterior margin of the orbit. Brown, irregularly marbled with darker.

Sydney, Port Essington, North and East Coasts.

312. TEUTHIS DOLIATA, Cuv. & Val.

Gunth. Cat. Fishes III., p. 323.

The height of the body is contained twice and two-thirds in the total length. Orange-coloured, with about thirty vertical bluish lines, the last of which are bent and run longitudinally along the hinder part of the tail; those above the pectoral fin are oblique and those on the operculum reticulated.

Fair Cape (Chevert Exp.)

NOTES ON SHELLS FROM THE SOLOMON ISLANDS AND AUSTRALIA.

BY J. BRAZIER, C.M.Z.S., &c.

1. CYPRÆA SOPHIÆ.

Cypræa sophiæ, Braz., Proc. Linn. Soc., 1875, Vol. I., p. 7.

Hab. Makeira Harbour, San Christoval, Solomon Islands.

I distributed a few specimens of this species among English and Australian Conchologists under the name of *Cypræa chrysostoma* in 1873, not wishing to retain that name, I gave the above in preference. I find that I have named it in the Hargrave's Collection in the Australian Museum as *C. chrysostoma.*

2. Helix Rockhamptonensis.

Helix Rockhamptonensis, Cox, Proc. Zool. Soc., 1873, p. 150.
,, *planibasis*, Cox, M.S., 1871.
,, *Moresbyi*, Angas, Proc. Zool. Soc., 1876, p. 267, pl. xx., figs. 8, 9.

Hab. Rockhampton, North-east Australia (Anderson).

This species was distributed in 1871 by Dr. Cox, named as *Helix planibasis*, a name I find in use in all the Australian Collections. I received my specimen from the person who first found it. Only recently Mr. Angas describes it under another name from specimens a little larger, said to come from Port Denison; I doubt this locality. For the convenience of Conchologists in Australia I subjoin the descriptions of Dr. J. C. Cox's species and that of Mr. G. F. Angas:—

Helix Rockhamptonensis, Cox.—"Shell with a large, open umbilicus, globosely conical, finely striated, dark purple chestnut, indistinctly ornamented at the base and apex with narrow yellow bands, the latter lightest; base flat, excavated round the umbilicus; spire large, bluntly conical, suture not margined; whorls six, convex, last produced; aperture diagonal, ovately lunate, dark purple within; peristome broadly expanded and reflected throughout; margins joined by a thin callus, columellar margin triangularly dilated, overhanging the umbilicus. Diam., greatest 1·27, least 1·08; height 1·12 of an inch."

"This is an interesting link between *H. Bloomfieldi* (which it in general aspects most resembles), *H. Parsoni* and *H. Rainbirdi*, having the flat base and large umbilicus of the last, and the large globosely conical form of the first, but with an absence of the characteristic margin of it and of *H. Parsoni.*" (Cox.)

Helix Moresbyi, Angas.—"Shell umbilicated, globosely conical, moderately solid, finely and irregularly obliquely striated, fulvous chestnut, paler at the apex, with various broad and narrow bands of deep brown, darker below the sutures; spire conical; whorls six, convex, the last somewhat flattened at the base and excavated towards the umbilicus; aperture oblique, sublunate, within glossy and of a pale purplish hue, lips black, margins approximating and joined by a thin callus, outer margin expanded and subreflexed, columellar margin dilated, partly concealing the umbilicus. Diam. maj. 23, min. 14, alt. 23 lines."

"In its general character this species comes nearer to *H. Yulei*, Forbes than to any other; but it differs in being larger, very much more conical, and in having the base of the last whorl peculiarly flattened." (Angas).

3. HELIX GELATA.

Helix gelata, Cox, Proc. Zool. Soc., 1873, p. 149. pl. xvi., f. *5a. 5b.*

Profusely ornamented and zoned with opaque white, apex almost black, interior of aperture dark chestnut; lip white.

Variety HELIX MADDOCKSI, Brazier.

Shell light straw yellow, ornamented on the periphery with two dark chestnut bands, the lower being contiguous to the suture, the upper continued a little above the suture, apex reddish; interior of the aperture white showing the dark chestnut bands; peristome white; margins (in some specimens approaching and in others distant) joined with thin white callus, right margin thin, rather broadly expanded and reflected; outer margin somewhat rounded and deflected; columellar margin broadly reflected covering about one half of the deep umbilicus. Diam. maj. 12, min. 9½, alt. 7 lines

Hab. Small Island near Timbo or Eddystone Island, Solomon Islands (Brazier).

Var. *a.*—Light yellow, ornamented with one broad chestnut band on the periphery and continuous at the suture.

Var. *b.*—Darker yellow, ornamented on the base with two fine lines on the periphery, two wider and a fine one below the suture.

Var. *c.*—Nearly white, base with one broad band nearly black, periphery and upper part ornamented with three broad bands.

Var. *d.*—Light brown, base ornamented with one narrow chestnut line, periphery with two rather broad, white lines at the suture; below a light brown intermingled with a few dark brown opaque spots.

Var. *e.*—Bright straw yellow, two narrow reddish bands on the periphery, apex light red.

Var. *f.*—Light yellow, nearly white, the periphery ornamented with one narrow reddish line, obsolete on the upper whorls.

Var. *g.*—Light yellow, with opaque white band on the periphery with a fine reddish line above and below it.

Var. *h.*—Dark yellow, ornamented with numerous opaque lines of a light yellow on the periphery and base, upper whorls white, apex dark red.

Var. *i.*—Light straw yellow, upper whorls white, apex dark red.

It is a very remarkable fact that *Helix Eddystonensis*, Reeve, is found on Eddystone Island, and only a short distance from it on another small island not named on any chart we get *Helix gelata*, Cox, and *Helix Maddocksi*, Brazier; the varieties I enumerate are procured in countless numbers, whereas *H. gelata* is very rare.

Species of Eucalyptus in the County of Cumberland: their habitat and uses.

By the Rev. Dr. Woolls, D.D., F.L.S., &c.

Part II.

Section I. Leiophloiæ.

1. *E. radiata,* (Sieb.) so called from the rayed appearance of the flower-buds, is a tree of moderate size, growing on the banks of the Nepean River and some of the adjacent creeks, and often seen with long strips of bark hanging from the upper branches. It is usually called "River White Gum," because the butt and branches are white and smooth, when they have shed their bark. In the *Flora Australiensis,* (Vol. III., p. 203), it is described as a variety of *E. amygdalina,* (Labill.), or the "Messmate" of the Southern Ranges, and Baron F. von Mueller, in his *Eucalyptographia* (Decade 5.) appears to adopt the same view for the purposes of classification. Although the flowers, fruit, and leaves of the trees are very similar, yet they differ most materially in bark, habit, size, and wood. *E. amygdalina,* as it is seen on the Mittagong Range, belongs to the section *Hemiphloiæ,* attains a gigantic size, and affords useful timber; whereas *E. radiata* occurs only near rivers, has a smooth bark, never rises very high, and is not esteemed for its wood. No one who has examined the trees in their native soil, would suppose that they could be reduced to the same species; and although the anthers of both are similar in shape, yet the fruit and the leaves are by no means identical. In the supposed varieties of *E. amygdalina,* however, the leaves abound in volatile oil, and are opposite and alternate; and thus, as there are certain points of resemblance amongst them, it is not surprising that a mere inspection of dried specimens, independent of any reference to habit, should lead to the conclusion that *E. radiata* is only a form of *E. amygdalina.*

2. *E. saligna,* "the Blue or Flooded Gum" of N. S. Wales, is one of the finest of our Eucalypts, rising to 100 or 120 feet with

a diameter of seven feet. The specific name is rather unfortunate as the leaves for the most part are ovate-lanceolate, and, with the exception of the fact that the tree is generally found growing on the banks of rivers or creeks, it bears no resemblance to the willows. Although rapid of growth and of less specific gravity than man of the Gums, the wood is used for building purposes, such as scantling, battens, flooring boards, posts and rails, and ships' planks, and it is excellent for the naves and felloes of wheels. In the *Flora Australiensis* (Vol. III., p. 229), the Blue Gum, or, at all events, some forms of it are referred to *E. botryoides* a tree very different in habit and belonging to another section. *E. saligna* occurs on many creeks in the county of Cumberland, and extends westward to the banks of the Grose and the gullies of the Blue Mountains. The wood of the mountain variety is used extensively by wheelwrights and carpenters, but it is reported to be somewhat inferior to that of the low country. According to Baron Mueller's figure (Decade 2.), the anthers are oval, opening with longitudinal almost parellel slits, and the seeds are without any expanding membrane. The bark of this tree is remarkably smooth, of a bluish-white, or mottled appearance; whilst, in exceptional cases, a rough fibrous bark is found on the butt. Though occurring generally near rivers or creeks, it is sometimes seen as a forest tree, and as such indicates a good soil. On the other side of the Dividing Range, *E. rostrata* is the species common on rivers and creeks.

3. *E. hæmastoma*, (Smith), or the "White Gum," takes its specific name from the reddish rim of the fruit, but as this peculiarity is not limited to one species of the genus, the designation is not a very appropriate one. This tree has a smooth white bark, and although similar to *E. Sieberiana*, (F.v.M.) in the shape of the anthers, yet it differs from that species in the texture of the bark, the venation of the leaves, and the shape of the fruit. At first sight, dried specimens of both species appear very similar; but upon careful examination, it will be found, as Baron Mueller

justly remarks, that, in *E. hæmastoma*, the veins are more spreading and prominent, the sterile stamens more numerous, and the fruit more inclined to be hemispherical. Both trees grow in the same soil, and they occur here and there on dry sandy ground from the neighbourhood of Sydney to the Blue Mountains, and seldom attain any great height; but they do not flower precisely at the same time. *E. micrantha* (DC.) seems to belong to the same species, but the flower buds and fruit are much smaller. The wood of the White Gum is not esteemed, being, according to the views of Sir W. Macarthur and Baron Mueller, generally crooked in growth and apt to decay, though in some places it is used for rough carpentry. As a wood for fuel, it is of very little value. In the neighbourhood of Parramatta and also on the Blue Mountains, this species appears sometimes with thin fibrous bark on the butt, and with fruit larger, and hemispherical in shape. This deviation from the typical form may, perhaps, be due to a greater moisture in the soil.

4. *E. viminalis*, sometimes called "Grey or Flooded Gum," and sometimes "Drooping or Manna Gum," is a species, which with some variations extends to many parts of N. S. Wales. Though on the Western side of the Dividing Range, and on the Southern Coasts of Australia, it rises to 150 feet in alluvial soil, yet, in the county of Cumberland, it is for the most part a tree of moderate size with a smooth, greyish bark and drooping habit. It resembles some forms of the common Grey Gum *(E. tereticornis)* but it differs from that species in the size of the operculum, the venation of the leaves, and the shape of the fruit. This is one of the Eucalypts in which the operculum varies, being sometimes hemispherical and sometimes conical, but seldom much longer than the calyx tube. Whilst it may be admitted that the forms of this tree, as found in many parts of the county of Cumberland, are not specifically distinct from the Manna Gum of the interior, yet the trees vary considerably in height, the colour of the bark, and the value of the timber, whilst the so-called Manna is more

common on the Western variety. Baron Mueller mentions in the fifth Decade of his *Eucalyptographia*, "that the Revd. Canon King noticed melitose-manna to a small extent on the leaves of *E. corymbosa*, when pierced by a phyllophagous beetle *(Anoplognathus cereus)*." The same substance has also been found on *E. punctata* near Parramatta. Mr. Bentham proposed to unite the Camden Woolly Butt with *E. viminalis*, but the former differs in having fibrous bark on the butt, and leaves occasionally opposite, especially on the young branches.

5. *E. tereticornis*, (Sm.), which, in different parts, has the names of "Grey," "Blue," or "Red Gum," and sometimes "Bastard Box," is one of the common forest trees on this side of the Dividing Range. It is also subject to great variation in the foliage, the size of the flowers and fruit, and the quality of the wood. The typical number of the florets is seven in each umbel and the operculum is generally much longer than the calyx; but in damp situations, the florets are frequently more pointed. This may be regarded as the most variable species near Sydney. Mr. Bentham reckons three varieties, viz. *latifolia*, *brachycorys*, and *brevifolia*, founded principally on the shape of the leaves and the opercula; but as these organs are liable to great differences arising probably from local causes, the varieties might be much extended. There is, however, very little difficulty in identifying the species, for whilst it is distinguished from some of its congeners by the shape of its anthers, it is separated from other allied species by the configuration of the fruit. In a dry state, it is difficult to distinguish the flower-buds from those of the large-leaved Iron Bark and the Red Mahogany, but as the bark of the three species is quite different, no one who has an opportunity of examining the trees in a living state could mistake the one for the other. This tree, which sometimes rises to 100 feet and upwards, affords useful timber for rails and posts, firewood, and rough buildings.

6. *E. punctata*, (DC.) is regarded by Mr. Bentham as a variety of *E. tereticornis*, but whilst the former is separated from it by the leathery texture of the bark and the toughness of the wood, the venation of the leaves and the shape of the fruit also show that the species are distinct. In size and habit, the two trees are somewhat alike, whilst, according to Mr. Bentham's artificial system, *E. punctata* is closely allied to *E. resinifera*, or the Red Mahogany, a tree of another section under the cortical system. Baron Mueller (Decade 1.) notices that my Parramatta specimens agree precisely with Heyland's drawing in De Candolle's *Mémoire sur la famille des Myrtacées*, pl. 4, and he agrees with me in thinking that it should be restored to the dignity of a species. Amongst woodmen, this tree is called Hickory or Leather Jacket. The wood is exceedingly tough and durable, and, next to Iron Bark, it is one of the most useful kinds for railway sleepers and work underground. In a technical point of view, *E. punctata* is distinguished from *E. tereticornis* by the fruit and leaves, the valves of the former being less prominent and the rim narrower, whilst the venation of the latter is much more parallel, and approaching that of *E. saligna*. This tree does not generally indicate good soil, but when occurring in low swampy places near the coast, the flowers and seed vessels are much larger than those of the ordinary type. The leaves abound in volatile oil, and the wood, which serves the same purpose as that of the last species, is also valuable for firewood. There is sometimes some dark, rough, persistent bark on the butt of this tree, but it is never, strickly speaking, hemiphloious.

7. *E. maculata*, (Hook.), or "The Spotted Gum," is a fine tree rising to 100 feet and upwards, and sometimes 80 or 90 feet without a branch. It grows on poor soil, or on the rocky sides of hills, and as a species is well defined by its double operculum, somewhat urn-shaped fruit, and large fertile seeds, which are black and shining. Baron Mueller has given a splendid figure of *E. maculata* in his *Eucalyptographia*, in which the peculiarities

of the species are well represented. In the early days of the colony, the wood was not much valued, as it had the character of decaying very soon when placed in the ground. Of late years, however, a different opinion has been expressed, and it is now used extensively for the staves of casks, the upper parts of railway bridges, and ship-building. The Baron states that "General Ward, K.C.M.G., found the specific gravity of the wood to be at an average in four experiments 0.942, and he records also the strength of this timber to bear a transverse strain and its degree of elasticity, in which respects it ranks high in value, though not equalling the best Iron Bark trees." *E. maculata,* occurs in the neighbourhood of Liverpool, and on the hills near Cobbitty, and has an extensive range in other parts of the colony. According to the systematic arrangement of Mr. Bentham, this species ranks next to *E. eximia,* or the smooth barked Bloodwood, but the trees are very different in habit and appearance, the one having smooth or mottled bark, whilst the other has a roughish bark of a fibrous texture, though not so well defined in that respect as *E. corymbosa,* the common Bloodwood.

8. *E. obtusiflora,* (DC.) is the only shrubby species indigenous in the county of Cumberland. It is found not far from the sea-coast near Sydney, and then again on the Blue Mountains about 2,000 feet above the level of the sea. In the coast variety, the leaves are sometimes four or five inches long, and three-quarters of an inch wide, the operculum obtuse, the flowers large for so small a species, the fruit ovoid-truncate, and above half an inch in length. On the Mountains the leaves are nearly as long, but not half an inch in width; whilst the flower-buds are somewhat mucronate, and the fruit about four lines in length. Judging from the bark, the shape of the anthers and the shrubby habit, it appears to me that both forms must be referred to the same species. There is, however, some difficulty respecting the shrubby Eucalypts which form brushes on the highest parts of the Mountains. Two of them are regarded by Mr. Bentham as

varieties of *E. stellulata* (Sieb.), viz. var. *angustifolia* with narrow thick leaves scarcely showing the venation, and *var. microphylla* which does not show any venation. This last variety is sometimes mistaken for *E. stricta*, another shrubby species with fibrous bark Mr. Bentham, who had the opportunity of examining the specimens of Sieber, A. Cunningham, and the writer, distinguishes *E. stricta* from the others by its anthers. Those referred to *E. stellulata* and *E. obtusiflora* have reniform anthers, the cells divergent, and confluent at the apex, whilst the last has anthers with distinct parallel cells, opening at first in round pores which extend into oblong slits. In the sixth Decade of his *Eucalyptographia*, Baron Mueller expresses a somewhat different opinion.

Section II. HEMIPHLOIÆ.

1. *E. Sieberiana* (F.v.M.), is the same as *E. virgata* (Sieber), the name having been changed by Baron Mueller, as it is only under exceptional circumstances, that the tree is reduced to a virgate or twiggy state. This species passes for one of the "Blackbutts" near Sydney, but on the Mountains and near Berrima, it is called "Mountain Ash." The butt of the tree is covered with a dark-coloured, deeply furrowed bark, similar to that of Iron Bark, but not so hard and resinous, whilst the branches are similar to those of the White Gum *(E. hæmastoma).* As already noticed, there is a great similarity between *E. Sieberiana* and *E. hæmastoma*, and to an ordinary observer, they seem to differ only in bark and wood. An examination of Baron Mueller's excellent figures will show how nearly they approach each other. In the stunted form, in which *E. Sieberiana* appears near the coast, the wood is not valued, but, according to Sir W. Macarthur, "it is much valued for rough purposes in districts where the better sorts of timber are not produced." He adds "this species usually occupies rough, rocky sites, and seems to form a link between the division of Iron Barks and that of Gums." This tree in the Southern Districts rises sometimes to 120 feet,

and the wood is said to make better staves for casks than that of Spotted Gum. It may also be employed for shafts, rough work, and fencing. The specific name was given in honour of its discoverer, Franz Wilhelm Sieber of Prague, who, in 1823, collected many specimens of native plants in New South Wales.

2. *E. pilularis* (Smith), the "Blackbutt" of the colonists, is a large tree, extending from Victoria to Queensland, rising, in good soil, to 100 or 150 feet in height, and sometimes even higher. It derives its specific name from the supposed pilular form of the fruit, and its popular name from the dark fibrous bark of the butt. This species, though rapid in growth, is one of the most valuable in the county of Cumberland, the wood being much in use for building, flooring-boards, and railway sleepers, and next to the White Iron Bark, *(E. siderophloia)*, capable of enduring a greater crushing strain than any other Eucalypt. The White Mahogany *(E. acmenoides)* was regarded by Mr. Bentham as a variety of *E. pilularis*, but this cannot be the case, as the former has fibrous bark, (resembling that of Stringy Bark), wood different in grain and colour; and the young seedlings have alternate leaves; whilst, as Baron Mueller remarks, "It ranges over a wider geographic area than the typical *E. pilularis*, extending far into the tropical regions of Eastern Australia." There can be no doubt but that the two trees are quite distinct, and, though the reniform shape of the anthers and similarity of fruit have caused them to be associated together, they must be placed in separate sections. In favourable situations, the seedlings of the Blackbutt are very numerous, all with narrow, sessile, opposite leaves, pale underneath, and full of pellucid dots, though the full grown leaves generally are not so abundant in volatile oil as those of some other species. The specific gravity of the wood is about 0·897.

3. *E. hemiphloia* (F.v.M.), or "Box" (so called from some fancied resemblance to the wood of the European Box) is one of our commonest forest trees, and indicates good grazing country.

The wood is somewhat variable, but generally speaking it is useful on account of its toughness and durability, though it is subject to white ant and dry rot when standing long in the ground. It is excellent for firewood, and the bark is utilized for covering rustic buildings. This tree also varies considerably in size; for whilst, in some places, it rises over 100 feet, it appears in others somewhat stunted in growth. The specific name is rather inappropriate, as there are several species of half-barked Eucalypts to which the name is equally applicable. With the Box of the Eastern coast, Baron Mueller connects *E. albens*, or the "White Box Tree" on the other side of the Dividing Range, as the trees agree in all their characteristics, differing only "in the more extensively persistent bark, in paler dull foliage, and in chalky-white bloom on the flowers." Mr. Bentham places the trees in different sections, but, according to his description of the anthers, they vary only in the openings, and that, too, not materially, the difference probably arising from the comparative age of the flowers. This tree is quite distinct from the Yellow Box of the interior, *(E. melliodora)*, which is a tree of moderate size with a smooth bark of a pale colour, scaling off in flakes, especially in the upper parts. It also differs from the Dwarf Box of the Darling in having the fruit more oblong in shape, and the capsule more deeply sunk.

4. *E. longifolia*, (Link & Otto), the common "Woolly Butt," is well defined by its large flowers and fruit, and long leaves. The flowers are generally in threes, and the leaves sometimes a foot in length, whilst the fruit is larger than that of any Eucalypt near Sydney, excepting perhaps an occasional specimen of *E. resinifera*, growing near the coast. The bark of the Woolly Butt is somewhat variable, for, whilst in the younger trees, it is of a brown colour, thick, deciduous, and scarcely fibrous, that of the older trees becomes persistent on the butt and of a greyish colour, the branches being smooth and pale. In favourable situations, the Woolly Butt sometimes attains the height of 150 feet with a

diameter of five feet. The wood though more easily worked than that of many Eucalypts, is not considered durable, and is more valued for fuel than any other purpose. According to experiments directed by Baron Mueller, the bark of this tree yields 8·3 per cent. of Kino-tannic acid and can be converted into packing paper; whilst it was found, from leaves which were forwarded from Parramatta, that the yield of 100 lbs. of them is between three and four ounces of volatile oil, remarkable for imparting an indelible transparent stain to paper, and giving a clear flame somewhat inferior to kerosene in intensity. The specific gravity of this oil is 0·940, and the boiling points between 380° and 420° respectively. *E. longifolia,* as the Baron remarks, is not easily mistaken for any of its congeners. It seems to attain its greatest size in New South Wales, but it does not extend far inland.

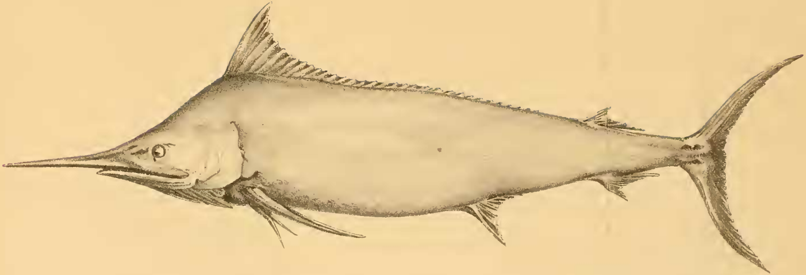
5. *E. largiflorens* (F.v.M.), seems to be the *E. bicolor* of A. Cunningham, and is known to workmen as "Bastard Box," "Yellow Box," and "Gumtop." It is a very large tree growing in low or swampy places to the height of 150 feet. In its young state, it resembles the common Box, but, as the tree advances in age, it loses its half-barked character and resembles the Grey Gum, though frequently retaining some fibrous bark on the butt. The specific name *largiflorens* is very appropriate, for, although the tree does not appear to flower regularly, the top of it is sometimes one mass of flowers. In the larger trees, the wood is very tough and durable, being adapted for fencing, shafts, cogs, and rough buildings, but they are frequently hollow and decayed at heart. The flowers and leaves of this species resemble some forms of *E. crebra,* but, whilst the two species belong to different sections under the cortical system, they are also separated by the venation of the leaves and the shape of the anthers. It would appear that *E. largiflorens* has a very wide range, and it is remarkable for extending far into the interior, though somewhat dwarfed in growth, and occasionally with red filaments. For the determination of this species we are much indebted to Baron

Mueller, for he has not only corrected the errors of the *Flora Australiensis*, Vol. III., p. 215, (in which specimens of *E. crebra* and *E. populifolia* seem to have been associated with *E. bicolor*), but he has also removed all doubt as to its identity by the accurate figure which he has furnished of its flower and fruit *(Eucalypt.* Decade 5.)

NOTES AND EXHIBITS.

Notes on a new variety of *Helix Palmensis*, by J. Brazier, C.M.Z.S., &c.—*Helix Palmensis*, variety *meridionalis*. Shell very thin, transparent, brownish yellow; suture with a dark reddish brown band about half a line broad on the two lower whorls; four upper having it continued in a fine thread spirally to the apex; periphery with seven or eight faint nearly obsolete chestnut lines contiguous to the suture; umbilicus encircled with dark chestnut; peristome thin, slightly reflected, internal edge dark nearly black. Diam. maj. 20, min. 15, alt. 14 lines. *Hab.* Large South Palm Island, North-east Australia (C. E. Beddome). This very fine thin specimen was obtained by Mr. Beddome during a short stay at the abovenamed Island in 1877, he also obtained the typical form but larger than those I obtained on the Great North Palm Island during the Chevert Expedition and described in these Proceedings 1876, p. 105. Mr. Beddome also found one specimen of *Helix Mulgravensis*, Braz., when described in the Proc. Zool. Soc., 1872, p. 21, I gave as the habitat Mulgrave Island, Torres Straits on the authority of a trader. The islands in the Straits do not produce any of the banded *Helicidæ*, the only large species of *Helix* on the islands in the Straits is *H. semicastanea*, Pf., it is reddish-yellow above, base deep chestnut.

Mr. Brazier exhibited an unusually large Tick *(Ricinus)*, taken on an *Echidna Hystrix;* also the shells referred to in his papers, and some *Phyllotheca* fossils from Rookwood.



HISTIOPHORUS GLADIUS.

Sedgfield lith

45

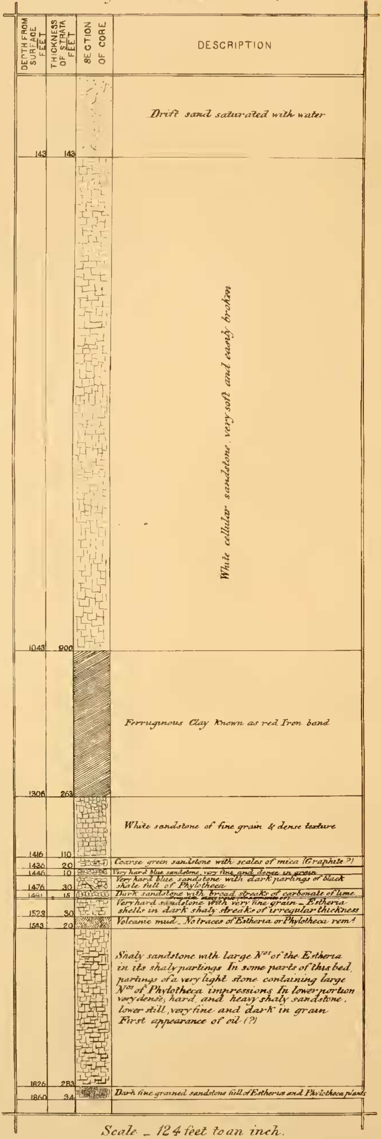
M
Ai
an
bu.
fig
D

C.
th
bı
fc
a]
li
c]
n
S
v
s
t
F
t]
s
I
I
i
l
]

c
a

SKETCH OF THE MOORE PARK BORINGS.
SYDNEY — N.S. WALES.

Twenty feet above the level of the sea



DEPTH FROM SURFACE FEET	THICKNESS OF STRATA FEET	SECTION OF CORE	DESCRIPTION
143	143		*Drift sand saturated with water*
1043	900		*White cellular sandstone, very soft and easily broken*
1306	263		*Ferruginous Clay known as red Iron band*
1416	110		*White sandstone of fine grain & dense texture*
1436	20		*Coarse green sandstone with scales of mica (Graphite ?)*
1446	10		*Very hard blue sandstone, very fine and dense in grain*
1476	30		*Very hard blue sandstone with dark partings of black shale full of Phylotheca*
1491	15		*Dark sandstone with broad streaks of carbonate of lime*
1523	30		*Very hard sandstone with very fine grain — Estheria shells in dark shaly streaks of irregular thickness*
1543	20		*Volcanic mud — No traces of Estheria or Phylotheca rem.s*
1826	283		*Shaly sandstone with large N.os of the Estheria in its shaly partings In some parts of this bed, partings of a very light stone containing large N.os of Phylotheca impressions In lower portion very dense, hard, and heavy shaly sandstone, lower still, very fine and dark in grain First appearance of oil (?)*
1860	34		*Dark fine grained sandstone full of Estheria and Phylotheca plants*

Scale — 124 feet to an inch.

WEDNESDAY, SEPTEMBER 29TH, 1880.

The Vice-President, W. J. Stephens, Esq., M.A., in the Chair.

MEMBER ELECTED.

Dr. Gordon of Murrurundi.

DONATIONS.

Eight Annual Report of the Zoological Society of Philadelphia.

Verhandlungen Zool-Botanischen Gesellschaft in Wein, 1879.

Journal of the Royal Microscopical Society, London, Vol. III., No. 1 and 4.

Bulletin of the Museum of Comparative Zoology, Harvard College, Massacchusetts, Vol VI., No. 3.

Journal of Conchology, Vol. III., No. 3.

PAPERS READ.

ON A NEW SPECIES OF DIASERIS.

BY THE REV. J. E. TENISON-WOODS, F.G.S., F.L.S., PRES. LINN. SOC. N.S.W.

Amongst some corals recently dredged at Port Denison by Messrs. Haswell and Morton there is one new species of a very interesting character. It belongs to the section *Madreporaria aporosa*, family *Fongidæ*, second sub-family *Lophoserinæ*. Amongst the simple and free corals of this division there is one with bare and lobed walls which Messrs. M.-Edwards and Haime experienced much difficulty in assigning to any position because of the incomplete character of the calice. A new genus was erected for it, placed as above, removing it from the genus *Fungia* in which it had been included by Michelin (Magasin de Zoologie, Vol. V., 1843).

The genus is thus described :—" *Diaseris.* Corallum simple, free, discoid, with a bare and costulate wall with a structure similar to *Cycloseris,* but in its young state it is formed of a certain number of separate petaliform lobes which in the more mature state become more or less united by their edges." The authors add that in all the various families of corals no other instance of this structure is known. Two species were described by them, *Diaseris distorta,* Michelin, of unknown habitat and *D. Freycineti.* Both were large, viz., 50 millimetres across and 10 high, and the differences between the species were that *D. Freycineti* was a coral with closer septa which were not so high as *D. distorta.* See Hist. Nat. des Corallaires, Vol. III., p. 54. Also Comptes Rendus de l'Academie des Sc., Vol. XXIX., 1849, p. 72.

The species to which I have now to call attention is very much smaller than either of the preceding and there are also peculiarities in the septa as I shall proceed to show.

DIASERIS MORTONI, *n. s.*, Plate XV., fig. 1, 2.

Corallum semicircular, thin, subdiscoid, divided into two, three or four lobes in some specimens, though the majority are completely semicircular with an entire rounded edge. Base flat or concave in the slightest degree, showing no trace of any former separation between the lobes. Costa distinct, fine, granular and corresponding with the septa, but all equal in thickness and taking their origin from the edge at distances the same at the various orders; the outer edge of the septa projecting like the teeth of a fine cog-wheel outside the base. In nearly all the specimens these were four distinct systems, though some had only three, two, and some with only one and the rudiments of two others. The cycles depended on the age of the specimens. They ranged from five to eight incomplete. All are granular, but the granules are in ridges so as to give rise to a vermicular surface and the ridges project at exactly opposite sides of the septa; the synapticulæ are few and quite at the base. The primaries are quite free with a conspicuous thickening at their origin; the secondaries are also free with a slight thickening, and both have a rounded crenulate margin. All the other orders gradually branch out or divaricate from one another with a gradual curve. They are very incompletely formed so as to be deeply divided into irregular paliform lobes. The height to which the septa rise is also dependant on their age, the first being much higher than the rest and sloping gradually from the margin upwards towards the central fossa and so on proportionately for all the cycles. All except the central septum curve towards the outer margin so as to preserve a flabellate form. In the fossa there are a few papillæ of a columella.

There can be no doubt that this form of coral is a form of *Cycloseris*, in which some of the systems are aborted. In this view there is nothing to distinguish the present species from *C. cyclolites*, except the size. I do not say that this is the true nature of the organism, but a close attention to the young stages will reveal the whole matter. It will be observed that one strong point in favour of the explanation which is suggested for this abnormal coral is the variation in the number of systems which are aborted. In many instances all are gone but one. In this case however, we have a semicircular fringe of septa round the fossa which represents all the other systems. Another fact is the occurrence of one or two specimens in which only one system is aborted. In this case the coral is to all intents and purposes a very small and depressed *C. cyclolites* minus one system.

About sixty specimens were dredged up off Holborn Island. They are of various sizes and seem to indicate some disadvantageous circumstances in their growth by which they have been stunted. Some of the specimens were much eroded and full of small grains of sand, foraminifera, &c. I have dedicated the species provisionally to Mr. Alexander Morton.

DESCRIPTION OF TWO NEW SPECIES OF AUSTRALIAN FISHES.

BY E. P. RAMSAY, F.L.S., &c.

SOLEA MACLEAYANA, *sp. nov.*

D. 64-66. A. 50. C. 18. V. 5.

The height of the body is twice and one-seventh in the total length without the caudal fin; the length of the head is one-sixth of the total length, and about five times and one-fourth in the total without the caudal; no pectoral fins; the right ventral joined to the anal; a small tubular nostril on the coloured side; eyes on the right side, the upper slightly in advance of the lower, both small, the distance between them slightly greater than their diameter; the dorsal commences on the snout, the anterior rays small, simple, some on the back and posterior portion forked, no scales on the rays. Scales on the body ctenoid, with eight to ten spines, about eleven rows of scales from the eye to the cross line, along the lateral line; from thence 110 to 116 rows along the lateral line on to the tail; lateral line straight.

Colour light brown, crossed by narrow dark brown irregular narrow bands about as wide as the interspaces, extending on to the fins, some of the bands forked, about thirty-five or more on the body and head, four or five on the caudal fin.

A rather small plump species. A number were taken in the net at Manly Beach, September 11th, 1880, with *Solea microcephala.* I have dedicated this very distinct species to my esteemed friend the Hon. Wm. Macleay, F.L.S., &c.

LOTELLA GRANDIS, *sp. nov.*

B. 7. D. 9/52-54. A. 58.

The first two rays of the ventral fins produced, the second the longest, reaching to the vertical from behind the base of the pectoral; pectoral fin triangular, tapering; first dorsal separate, of nine spines. The mouth oblique, snout slightly turned up, lower part of forehead concave, the maxillary reaches one-third of the diameter of the eye behind the eye, the diameter of the orbit is five times in the length of the head; the height of the body at the commencement of the second dorsal is nearly equal to the length of the head, and is thrice and three-fourths in the length of the body, without the caudal fin. Snout once and a-third the diameter of the eye. Head thrice and two-thirds in the length without caudal, the barbel on the chin equal in length to the short diameter of the eye, less than the long; the width of the interorbital space equal to the snout. Vent opposite the fourth ray of the second dorsal. Nostrils close together. Teeth in viliform bands in the jaws, uniform, no larger series. The depth of the head is more than one-fifth greater than its width; the anterior dorsal fin commences behind the root of the pectoral; the length of the pectoral exceeds the distance from the posterior margin of the orbit to the upper angle of the gill covers. The ventral is inserted the length of the pectoral from its base, and is a little longer than the pectoral fin.

General colour reddish brown or light cinnamon, eye bright yellow; the pectoral fins orange; lips, gills, chin, and ventral fins orange-yellow; the anal, dorsal, and caudal fins reddish-brown with a distinct black margin.

Hab. Wollongong.

SPECIES OF EUCALYPTUS IN THE COUNTY OF CUMBERLAND: THEIR HABITAT AND USES.

By the Rev. Dr. Woolls, D.D., F.L.S., &c.

Part III.

Section III. Rhytiphloiæ.

1. *E. acmenoides*, (Schau.) or the "White Mahogany," is a species which Mr. Bentham has united with *E. pilularis*, or the "Blackbutt." Baron Mueller (Decade 3,) speaks of it somewhat doubtfully as a distinct species, but I think that further inquiry

will prove that it is really so. The bark of the White Mahogany is similar to that of Stringy Bark, though not so fibrous; whilst the wood is very different from that of Blackbutt, being of a light colour, sometimes prettily waved, and of a satiny appearance. The trees also vary in habit and size, the White Mahogany being more of a forest tree than Blackbutt, and never, as far as I have observed, attaining the same height. The timber is useful for building purposes, palings, and flooring boards, and is heavier and more durable than that of Stringy Bark. Baron Mueller says of this tree, that "either as a variety or as a species it differs from *E. pilularis* in more fibrous outside paler and still more extensively persistent bark, further in leaves of smaller size, thinner consistence and beneath paler hue with only hypogenous stomata and more visible oil dots, in smaller flowers on thinner stalklets and less compressed stalks, smaller fruits with a narrower rim and often rather more enclosed valves." This species is common near Parramatta, and extends to the Blue Mountains and Illawarra. In its general appearance, it is so like Stringy Bark as to be mistaken sometimes for that tree; but no one, unless judging solely from dried specimens, would connect it with Blackbutt. This consideration convinces me, that the artificial system of classification is open to objection.

2. *E. botryoides*, (Smith), the "Bastard Mahogany" or "Bangalay" of workmen, occurring for the most part in moist sandy places near the coast, is seldom found to attain any great size in the neighbourhood of Sydney, and generally has a gnarled appearance. In the *Flora Australiensis* (Vol. III., p. 229), this tree has been placed together with *E. saligna* or the Blue Gum. There is certainly some resemblance in the flowers, fruit, and leaves, but the trees differ very much in bark, wood, and habit. Sir W. Macarthur, in referring to *E. botryoides* as it appears in the Southern Districts, calls it "a crooked-growing tree; the timber much valued for knees and crooked timbers of coasting vessels." This character agrees very well with the tree as seen

at Manly Beach. According to the Baron, who, in his *Eucalyptographia,* has furnished a very accurate figure of the species, "The shady and horizontal dark-green foliage of this beautiful tree gives it among Victorian species quite a peculiar and imposing aspect, reminding rather of an *Eugenia* than an *Eucalyptus.* Stems will occasionally attain a height of eighty feet without a branch and a diameter of eight feet." Unless this tree has been confused with *E. robusta,* or the "Swamp Mahogany," it must attain a greater size in Victoria than in New South Wales, whilst its mode of growth in the former colony is not remarked for its crooked or gnarled appearance. The specific name arises from the bunch-like form of the flowers and fruit, as they are close together and nearly sessile, but Baron Mueller thinks that the name *platypodas* given to it by Cavanilles in allusion to the flatness of the flower stalks, is more appropriate.

3. *E. robusta,* (Smith), or the "Swamp Mahogany" is one of our finest Eucalypts, rising in low and swampy situations to 100 feet and upwards with a diameter of five to six feet, and well defined as a species by its large flowers, wide glossy leaves, and fruit sometimes exceeding half an inch in length. In the systematic arrangement of Mr. Bentham, it stands between *E. miniata,* and *E. botryoides,* but it differs from these species in fruit and foliage, as well as in its robust habit and proportionate height. According to Sir W. Macarthur, the timber is useful for inside work, but not equal to the better sorts of Eucalypts in strength and durability, whilst Mr. Moore, F.L.S., reports that it is much used for ship-building and wheelwright's work. I believe, speaking generally, that the wood is not so much valued as that of many Eucalypts, but that, never the less, it is utilized for rough furniture and also for mallets. This tree has been recommended for plantations and parks on account of its umbrageous character and ornamental appearance, but I have noticed, that in dry situations, it grows but slowly and seems stunted. Of all the species with which I am acquainted, none (with the exception of

E. globulus,) is so well adapted for counteracting the effects of malaria, or for absorbing the superfluous moisture in low grounds. *E. robusta* occurs in moist places, here and there, from Manly Beach to the Blue Mountains, though not extending into the interior, nor, as it appears from Baron Mueller's *Fragmenta* (Vol. II., p. 44) to the colony of Victoria. Its exact limits, however, remain to be defined.

4. *E. resinifera* (Smith). The specific name was originally applied to the "Broad-leaved or White Iron Bark" *(E. siderophloia)*, because that species is the most noted for its abundance of kino. By the arrangement of Mr. Bentham in the *Flora Australiensis* and the concurrence of Baron Mueller in his *Eucalyptographia*, the term *resinifera* is restricted to the Red or Forest Mahogany. This tree rises in favourable situations to 150 feet with a proportionate diameter, and although well known to practical men by its bark and wood, the flowers and fruit are very similar to some forms of *E. siderophloia* and *E. punctata*. The wood is extensively used for fencing, beams, rafters, and shipbuilding, and is regarded as being very strong and durable. In the neighbourhood of Parramatta, the flowers and fruit are comparatively small, but, on the Blue Mountains near Springwood and also in the Manly Swamps, they are much larger. Mr. Bentham regards the latter as variety *grandiflora*, though somewhat doubtfully, as he says it is very near *E. pellita*, and possibly referable to it. Baron Mueller's figure of *E. resinifera* gives a very good idea of the species generally, but the fruit of the Mountain variety is not only larger, but the valves are not so much exserted, and it wants the broadish outer ring around its orifice. This is the fourth of the trees popularly termed Mahoganies, though it may be remarked in passing that none of them bear any resemblance to the West Indian Mahogany. Whilst highly useful for the purposes indicated, they are not valued for fuel. *E. microcorys*, the Forest Mahogany of the

Northern parts of the Colony does not extend to Port Jackson. This species is famous for the so-called Tallow Wood.

5. *E. corymbosa*, (Smith), so called, because the flowers are generally in a terminal corymbose panicle, is the principal "Bloodwood" of the Colonists. The popular name is derived from the kino-secretions which are found in the concentric circles of the tree, or which exude from them in a liquid state. The flowers and fruits of this species are comparatively large, the former being sometimes an inch in length, whilst the seeds are winged. In the neighbourhood of Port Jackson, it appears stunted, but I have measured a tree near Parramatta which I found to be 112 feet, and Sir W. Macarthur reported from specimens seen further south an average height of 120 feet. The tree grows rapidly, and when young the wood is soft, but, in the older trees, it becomes hard, and stands well in damp ground. Though not to be compared in point of toughness or durability with some of the Iron Barks or Mahoganies, it is nevertheless utilized for posts, rails, and beams. The kino-sap is very abundant, and is likely to prove useful for industrial and medicinal purposes. According to the Catalogue of the Victorian Exhibition, 1861, the leaves are found to contain a valuable essential oil. "The yield from 100 lbs. of leaves was as follows: pure limpid oil 9 ounces 3 drachms, oil containing resinous matter in suspension 6 ounces 2 drachms; of the latter 50 per cent. of its volume may be estimated as consisting of solid matter upon which assumption the total yield may be approximately stated as 12 ounces 4 drachms" (see Report). Manna is sometimes found on the leaves of *E. corymbosa*, and the bark of the tree is useful for its fibre.

6. *E. eximia*, (Schau.) the "Smooth-barked," "Yellow," or "Mountain Bloodwood," seems to have derived its specific name from its proportionately large cream-coloured flowers and urceolate fruit, the latter sometimes nearly an inch in length. This, like *E. corymbosa*, is a large tree, rising 60 or 80 feet, but differing

from that species in the smoother and more scaly texture of the bark, the longer and more coriaceous leaves, and the double operculum similar to that of *E. maculata*. The range of this species has not been fully ascertained, but it occurs on the slopes of the Blue Mountains, the banks of the Grose and the Hawkesbury, the ranges near Bent's Basin, and in the northern parts of the colony. The wood is soft, light in colour, and liable to the attacks of grubs and white ants. It is not esteemed for carpenter's work or even for posts, but it is good for fuel. In the month of October, *E. eximia* may be seen flowering abundantly near the Railway-line beyond Emu, and then forming a conspicuous object amidst the dark foliage of the forest. The bark of this tree, which is about an inch or more thick is rather scaly than fibrous, of a yellowish colour, persistent on the butt and smooth on the smaller branches, and peeling off in flakes only in the outer layer. The bark differs from that of the other species in the section and resembles that of the broad-leaved Tea-tree, (*Callistemon salignus*). Mr. Bentham considers that *E. eximia* is more nearly allied to *E. maculata* than to *E. corymbosa*, though associated with the latter species from the fact that a red-coloured kino issues (but in less quantity) from the concentric circles of the wood. The leaves, which sometimes are eight inches long, are very thick, penniveined and reticulate, and full of volatile oil, an oil-cyst appearing in each of the reticulations.

7. *E. polyanthema* (Schauer), the "Lignum vitæ" or "Poplar-leaved Eucalypt" is figured by Baron Mueller in his third Decade and is one of those species of which the anthers are truncated and opening by terminal pores. In somewhat varied forms, it has a wide range, and sometimes rises to a great height, but in the County of Cumberland on the banks of George's River, the Nepean, and the Hawkesbury, it is a tree of very moderate size, remarkable for the copiousness of its flowers, the roughness and thickness of its bark, and the poplar shape of its leaves. The wood is close grained and exceedingly tough, of a dark colour

towards the centre, and, when of sufficient size, is useful for rough furniture, cogs, naves, and felloes. *E. polyanthema* resembles *E. populifolia* beyond the Dividing Range, but the trees differ in bark and habit, whilst, according to the Baron Mueller the latter has "leaves of lustrous green, less compound in florescence, smaller and more crowded flowers on shorter or hardly any stalklets, proportionately larger lid, stamens all fertile, anthers with more lateral openings, and filaments of darker colour and smaller fruits." The leaves of *E. polyanthema* are sometimes glaucous, especially when growing near a river or creek, and the operculum is double in the earlier stages of development. I have found a tree of this species occasionally amongst forest-trees in the neighbourhood of Liverpool and Richmond, but its proper habitat is near the banks of rivers or creeks. It does not occur so far as I have been able to ascertain, near Sydney or Parramatta, but according to Baron Mueller, the Southern variety prefers dry ridges and hills, or undulating country.

NOTES AND EXHIBITS.

J. Brazier, Esq., C.M.Z.S,, &c., exhibited two fine specimens of *Voluta musica,* from Porto Rica, and a large one of the same species from Jamaica, West Indies, received from Mr. J. H. Thompson, of New Bedford; *Amphiperas hordacea,* living on *Gorgonia,* obtained at Kouei, New Caledonia, by Mr. R. C. Rossiter; and a new Conchological Work edited by Dr. E. von Martens of Berlin, entitled "Conchologische Mittheilungen als Fortsetzung der Novitates Conchologicæ," with six plates of coloured figures.

◆

WEDNESDAY, OCTOBER 27TH, 1880.

W. J. Stephens, Esq., M.A., Vice President in the Chair.

MEMBERS ELECTED.

Lieut. C. E. Beddome of Hobart Town.

The Rev. G. F. Macarthur of Parramatta.

DONATIONS.

Jahresbericht des Vereins fur Naturwissenschaft zu Braunschweig, 1880.

Royal Society of New South Wales, Journal and Proceedings, 1879.

South Australian Institute, Annual Report, 1879-1880.

Bulletin of the Museum of Comparative Zoology, Harvard College, Massachusetts, Vol. VII., No. 1.

PAPERS READ.

ON SOME NEW AUSTRALIAN MARINE ISOPODA—PART I.

BY WILLIAM A. HASWELL, M.A., B.SC.

[Plates XVI.-XIX.]

The Edriophthalmata of the Australian Coast present probably on the whole, as numerous and prominent peculiarities as any other section of the marine fauna. Among the Amphipoda the genera *Cyproidia* and *Iciliús*, are perhaps the most remarkable, and both must be regarded as occupying positions separated by considerable intervals from all other described forms ; but almost equally characteristic are such as *Amaryllis*, *Glycera*, *Xenocheira*, *Polycheria*, and *Wyvillea ;* though these find near allies among genera from other regions. Among the Isopoda of Australia, there are probably, almost as many peculiar and aberrant forms as among the Amphipoda, though the variety of species and the number of individuals are by no means so great in the former group as in the latter. As with the Amphipoda the home of the Australian non-parasitic marine Isopoda is among the luxuriant algæ and sponges in the temperate zone ; the abundance and variety of the invertebrate life populating these miniature forests, in Port Jackson for example, being extremely great, and the Edriophthalms forming one of the most striking features. Further north both Amphipoda and Isopoda become very much rarer ; among the algæ on the shores of Moreton Bay I have been able to detect but a very few species, and in Port Denison they become extremely rare.

Genus CODONOPHILUS, *(novum)*.

Body slightly convex, abdomen markedly narrower than the thorax, with six free articulations ; terminal segment lamellar ; epimeræ distinct though small ; head rather narrower than the first segment of the thorax. Eyes very large ; antennæ sub-equal, stout, inserted under the head. Mandibles with elongate palpi. Maxillipedes small, operculiform, three-jointed. Thoracic limbs all anchor-like, with long dactyla. Posterior abdominal appendages free, uniramous.

Codonophilus argus, *sp. nov.*, Plate XVI., fig 1.

Eyes very large, extending on the under surface of the head. Thoracic appendages sub-equal, all with much elongate, curved and pointed dactyli. Ramus of abdominal appendages falciform with a few scattered cilia. Terminal segment scale-like, acuminate. Length 5/32 in.

Found under the bell of a *Rhizostoma* in Port Jackson.

This species approaches *Ægathoa*, Dana, in many respects ; but differs from it in the sudden narrowing of the body at the commencement of the abdomen, and the uniramous character of the caudal appendages.

Rocinela vigilans, *sp. nov.*, Plate XVI., fig. 2.

Posterior thoracic segments broader than the anterior ; epimera produced behind to an acute point. Terminal segment shield-like, smooth, margins entire, ciliated. Eye occupying all the upper surface of the head, and extending on its under surface on either side nearly to the margins of the buccal orifice. Antennæ separated at the base by a short frontal process ; the superior about half the length of the inferior, the two basal segments of its peduncle together equal in length to the third segment ; the flagellum longer than the peduncle, composed of about fifteen articuli ; inferior pair with the flagellum more than twice the length of the peduncle. Maxillipedes with the terminal joints plate-like, a strong spine at the internal and distal angle of the first. Posterior thoracic limbs rather longer than the anterior pairs ; femora long-ovate ; dactyla rather short. Rami of caudal appendages unequal, the inner longer and broader than the outer ; both ovate, obtusely pointed, ciliated on the margins. Length 1 inch.

Hab. Holborn Island, near Port Denison, 20 fathoms (a single specimen).

Sphæroma aspera, *sp. nov.*, Plate XVI., fig. 3.

Body covered with larger and smaller granules. Head transverse, rounded in front, with a narrow lobe between the bases of the antennæ ; first segment of the thorax as broad as the four following ; a slight depressed line marking off the epimera. First segment of the abdomen with distinct lines marking the position of the coalesced segments, a prominent tubercle on the posterior margin on either side of the middle line. Last abdominal segment sub-triangular in contour, dilated anteriorly and ornamented with two slightly convergent irregular rows of minute tubercles ; the apex rounded, with a rectangular notch on either side near the extremity. Caudal appendages with the rami rather unequal, the outer the smaller, both broad, sub-acute. Inner antennæ very broad at the base; flagellum with twelve segments. Outer antennæ equalling the inner in length; flagellum with eight segments. Length ¼ inch.

Hab. Port Jackson.

Sphæroma (?) anomala, *sp. nov.*, Plate XVI., fig. 4.

Body smooth, strongly convex, frontal region prominent; last segment of the thorax longer than the preceding five, produced in the middle line behind to an obtuse angle; first abdominal segment with a broad, shallow excavation in its posterior border, defined on either side by a minute, spinous process. Last abdominal segment with a transverse row of one central, larger, and two lateral, smaller tubercles; apex sub-acute, armed below on either side with a minute acute process. Rami of abdominal appendages ovate, sub-acute. Length 5/16 inch.

Hab. Port Jackson.

This species approaches *Isocladus* in the form of the last segment of the thorax, and *Cymodocea* in that of the last segment of the abdomen.

Sphæroma lævis, *sp. nov.*, Plate XVI., fig. 5.

Thorax nearly as broad as long, the first segment longer than the others, all the segments grooved and bent slightly backwards laterally—the lateral and posterior extremities of the segments subacute. Terminal segment of the abdomen smooth, convex, rounded distally. Caudal appendages narrow-lanceolate, blunt. Length 3/16 inch.

Hab. Bondi, near Sydney, on sandy beach.

Cymodocea pubescens, *Milne-Edwards, (sp.)* Plate XVII., fig. 1.

Sphæroma pubescens, *M.-Edw., Hist. nat. Crust.* III., 209.

Strongly convex, tomentose. Frontal lobe obtuse. Antero-lateral angle of the first thoracic segment produced below the eye into a triangular acute lobe; postero-lateral angle similarly produced, rounded. Lateral angles of the following segments of the thorax produced, curved backwards, sub-acute. Penultimate segment of the abdomen produced behind into a rounded tubercle; a pair of sub-conical elevations on the last segment of the abdomen; notch very shallow, quadrangular; lobe pointed. Rami of caudal appendages rather unequal, both extending beyond the extremity of the segment, the outer the longer, the apex acute, curved outwards, the outer border with a conical tooth; the inner sub-acute. Basal joint of superior antennæ very broad, notched distally for the reception of the second joint. Flagellum of inner antennæ with twenty-seven articuli; that of the outer pair with twenty-one. Length of longest specimen one inch

Hab. Port Jackson etc.; common.

Cymodocea aculeata, *sp. nov.*, Plate XVI., fig. 6.

Body strongly convex, finely granular. First segment of the thorax twice as broad as the rest. Last segment of the abdomen with two prominent tubercles situated near the middle line, and two smaller ones external to them. Terminal notch very deep, quadrangular, the lateral processes triangular, central process very prominent, projecting slightly beyond the extremity of the lateral. Inner antennæ with the basal joints very broad and compressed, flagellum with twenty-two to twenty-five articuli. Outer antennæ rather longer than the superior pair; flagellum with about fourteen to sixteen articuli. Rami of caudal appendages sub-equal, outer ramus sub-ovate, with the outer border straight, the inner convex; inner ramus oblong, emarginate. Length 9/16 inch.

Hab. Port Jackson.

Cymodocea mammifera, *sp. nov.*, Plate XVIII., fig. 1.

Surface nearly smooth. Frontal lobe very small. Lateral angles of the thoracic segments rather blunt. Penultimate segment of the abdomen with two very small rounded elevations near its posterior margin. Second segment of the abdomen with a pair of low, mammiform elevations towards its middle; central lobe triangular, longer than those bordering the notch. Rami of caudal appendages sub-equal, pointed, sparsely ciliated. Length ⅜ inch.

Hab. Port Denison, Queensland.

Cilicæa tenuicaudata, *sp. nov.*, Plate XVII., fig. 2.

Surface obscurely granular. Postero-lateral angles of the segments of the thorax sub-acute Penultimate abdominal segment obscurely tubercular; median spine very long, extending far beyond the extremity of the abdomen, narrow, blade-like, bifurcate at the tip. Last segment of the abdomen with two rounded mammiform elevations; a deep mesial excavation at its posterior extremity. Peduncle of caudal appendages with a short spine representing the internal ramus; outer ramus ciliate, narrow, slightly curved backwards, extending rather beyond the extremity of the mesial spine, bifurcate at the tip. Flagella of antennæ each with about ten articuli. Length 5/16 inch.

Hab. Port Jackson.

Cilicæa crassicaudata, *sp. nov.*, Plate XVII., fig. 3.

Surface finely granular. Postero-lateral angles of the thoracic segments blunt. Penultimate segment of the abdomen slightly swollen; median spine rather short, not extending beyond the middle of the uropoda, thick, clothed with short cilia, apex entire, blunt. Last segment of the abdomen with two mammiform elevations; its posterior extremity deeply notched; notch with a low mesial lobe. Basal segment of the caudal appendages with a blunt process on its inner border; mobile ramus sub-cylindrical, ciliated, curved inwards, extending beyond the extremity of the median spine, apex rounded, entire; immobile ramus rudimentary. Length ½ inch.

Hab. Holborn Island, 20 fathoms (a single specimen).

Calyptura carnea, *gen. et sp. nov.*, Plate XVII., fig. 4.

Moderately convex, granulated. Head of moderate size, rather broader than long, eyes oval, received into a notch in the anterior border of the first segment of the thorax. First segment of the thorax broader than the succeeding five; lateral angles blunt. Last segment of the thorax produced into a broad shield extending beyond and concealing the abdomen, narrowing behind to a blunt apex, convex anteriorly, nearly flat in its posterior half, but with a slight median longitudinal ridge. Abdomen short, bisegmented, concealed by the last thoracic segment; last segment with a quadrangular median posterior notch, in the centre of which is a squarish lobe. Caudal appendages extending slightly beyond the extremity of the last thoracic segment; rami subequal, ciliated on the edges, the inner the longer, truncate, with an angular tooth on its inner border; outer ovate, pointed, the extremity slightly curved outwards. Inner antennæ broad at the base, separated by a small frontal lobe, flagellum of eleven or twelve articuli. Outer antennæ longer than the inner, flagellum of fourteen or fifteen articuli. Colour crimson. Length $\frac{1}{2}$ inch.

Hab. Port Jackson; common.

Genus HALIOPHASMA *(novum)*.

Body sub-cylindrical, depressed, thoracic segments sub-equal. Inner antennæ much shorter than the outer, with multi-articulate flagellum. Mandibles with a palp. Maxillipedes small, sub-operculiform. First pair of thoracic limbs large, sub-chelate, the rest simple or the second imperfectly subchelate. Last pair of abdominal appendages broad, operculiform, biramous—the inner ramus biarticulate, the outer scale-like. Terminal segment squamiform.

Differs from *Paranthura* in the possession of well-developed flagella in both pairs of antennæ or the outer pair only, and in the form of the second and third pairs of pereiopoda.

Haliophasma purpurea, *sp. nov.*, Plate XVIII., fig. 2.

Head and first thoracic segment flattened; last thoracic segment shorter than the others. Inner antennæ as long as the head, slender; flagellum rudimentary. Outer antennæ nearly twice as long as the inner pair; the peduncle very stout, the flagellum with seven articuli. First pair of thoracic limbs very thick, with stout, ovate propodos and strong dactylos; the following pairs all non-subchelate rather short, decreasing in size posteriorly. Terminal segment rounded at the apex, with three longitudinal dorsal ridges. Colour reddish-purple. Length $\frac{7}{8}$ in.

Hab. Port Jackson.

Haliophasma maculata, *sp. nov.*, Plate XVIII., fig. 3.

Head and first segment of the thorax slightly flattened. Inner antennæ as long as the head; flagellum with about twenty articuli. Outer antennæ twice as long as the inner; flagellum with numerous articulations. First pair of thoracic limbs large, similar to those of the preceding species; following pairs rather long, the first two prehensile. Terminal segment not longitudinally ridged. Terminal segment, caudal appendages and caudal scale fringed with long hairs. Colour light yellow, with black blotches. Length $\frac{3}{4}$ inch.

Hab. Port Jackson.

Paranthura australis, *sp. nov.*, Plate XVIII., fig. 4.

Eyes very minute. Antennæ extremely short, with rudimentary flagella, the internal pair rather the longer, First pair of thoracic limbs with the carpus somewhat produced superiorly and distally; propodos ovate, dilated proximally; the palm armed with a row five stout spinules. Second pair rather smaller than the first and of similar shape; palm armed with six ciliated spinules. Third pair smaller than the second. Caudal scales sub-circular; ramus of caudal appendages ovate, sub-acute, hairy. Terminal segment rounded. Length about ½ an inch.

Hab. Port Jackson.

Paranthura (?) crassicornis, *sp. nov.*, Plate XVIII., fig. 5.

Eyes very small. Internal antennæ very short, about half the length of the head; flagellum with several short articuli. External antennæ twice as long as the internal pair; flagellum thick, twice as long as the peduncle, composed of numerous articuli. First pair of thoracic limbs larger than the others; propodos ovate. Second and third pairs rather smaller than the first, and of similar shape. Following pairs sub-equal, with the dactylos long and falciform. Length 5/16 inch.

Hab. Port Jackson.

Differs from *Paranthura* in the form of the outer antennæ.

Genus STENETRIUM *(novum)*.

Body dorso-ventrally compressed; abdomen short, one-jointed. Head with a short rostrum. Antennæ inserted on the anterior margin of the head; internal pair very short; external pair very long, both with well-developed flagella. Mandibles provided with a palp. Maxillipedes expanded, operculiform. First pair of thoracic limbs with a large prehensile manus; following pairs ambulatory. First pair of abdominal appendages broad, operculiform. Caudal appendages biramous, inserted on the border of the shield-like abdomen near the extremity.

Stenetrium armatum, *sp. nov.*, Plate XIX., fig. 1.

Cephalon armed on either side with a prominent dorso-ventrally compressed, acute spine, curved outwards and forwards. Antero-lateral angles of the first thoracic segment produced forwards, acute; those of the second segment slightly produced; postero-lateral angle of the penultimate segment slightly produced backwards. Penultimate segment of the abdomen rudimentary;

second as long as the three last thoracic segments, its lateral border marked behind the middle by an angular notch, bounded behind by an inconspicuous acute spine ; a short, rounded mesial lobe at the posterior extremity. Eyes narrow, oblique. Internal antennæ scarcely as long as the three basal joints of the external pair, flagellum longer than the peduncle. External antennæ about four times as long as the inner pair, longer than the body ; basal joint of the peduncle produced externally and distally into a slender acute process ; second joint similarly produced, the process ending in a hair-like appendage; flagellum about equalling the peduncle in length, formed of numerous articuli which are very short proximally and increase slightly in length towards the distal end. Maxillipedes with the four basal joints forming a broad operculum ; terminal joint well-developed. First pair of thoracic limbs in the male very large ; ischium, meros and carpus sub-equal, the meros produced infero-distally into an acute process; propodos large, irregularly ovate, palm defined by a long acute spine, and armed in addition with a bifid denticle situated about its middle; dactylos powerful, sub-acute. Following pairs of thoracic limbs sub-equal. Inner ramus of caudal appendages longer than the outer, both lanceolate, armed laterally with slender hairs. Length ½ inch.

The female has the first pair of thoracic limbs smaller than in the male, the palm unarmed, concave, defined by a projecting acute angle.

Hab. Port Jackson, among algæ a few feet below low-water mark.

Stenetrium inerme, *sp. nov.*, Plate XIX., fig. 2.

Head transverse, rostrum sub-acute. Lateral borders of anterior thoracic segments not much produced, bilobed. Lateral border of last abdominal segment entire ; with an obscure, rounded, mesial lobe. Eyes rounded. Internal antennæ very slender, less than a quarter of the length of the external pair ; basal joint of the peduncle very short and broad, second narrower and slightly longer, third scarcely distinguishable from the flagellum; flagellum about twice as long as the peduncle. External antennæ longer than the body, the three basal joints of the peduncle short and stout, the third the longest of the three and provided distally and externally with a short, acute spine; flagellum shorter than the peduncle. Penultimate joint of the maxillipedes not expanded. First pair of thoracic limbs large; propodos sub-triangular in outline, the palm transxerse, concave, armed with a few short bristles, and defined by a prominent acute tooth; dactylos much longer than the palm. Following pairs of thoracic limbs decreasing slightly in length posteriorly. Caudal appendages with the inner ramus longer than the outer, both broad-lanceolate, truncate, with one or two lateral notches and a few long, slender setæ. Length about 5/16 inch.

Hab. Port Jackson.

Explanation of Plates XVI.-XIX.

In all the figures *a*—inner antennæ; *b*—outer antennæ; *c*—first pair of pereiopoda; *d*—mandibles; *e*—first pair of maxillæ; *f*—second maxillæ; *g*—maxillipedes; *x*—terminal segment or caudal appendages.

Plate XVI.

Fig. 1. *Codonophilus argus*, five times the natural size.
,, 2. *Rocinela vigilans*, natural size.
,, 3. *Sphæroma aspera*, seven times the natural size.
,, 4. *Sphæroma anomala*, four times the natural size.
,, 5. *Sphæroma lævis*, five times the natural size.
,, 6. *Cymodocea aculeata*, twice the natural size.

Plate XVII.

Fig. 1. *Cymodocea pubescens*, natural size.
,, 2. *Cilicæa tenuicaudata*, three times the natural size.
,, 3. *Cilicæa crassicaudata*, three times the natural size.
,, 4. *Calyptura carnea*, four times the natural size.

Plate XVIII.

Fig. 1. *Cymodocea mammifera,* three times the natural size.
,, 2. *Haliophasma purpurea,* three times the natural size.
,, 3. *Haliophasma maculata,* three times the natural size.
,, 4. *Paranthura australis,* nine times the natural size.
,, 5. *Paranthura* (?) *crassicornis,* five times the natural size.

Plate XIX.

Fig. 1. *Stenetrium armatum,* seven times the natural size.
,, 2. *Stenetrium inerme.*

NOTES ON RECENT MOLLUSCA FOUND IN PORT JACKSON AND ON THE COAST OF NEW SOUTH WALES AND OTHER LOCALITIES WITH THEIR SYNONYMS.

BY J. BRAZIER, C.M.Z.S., &c.

1. POLYTROPA STRIATA.

Buccinum striata, Martyn, Univ. Conch., pl. 7, ed Chenu., pl. 3, fig. 1. *Buccinum orbita-lacunosa,* Chem., Conch. Cab., X., fig. 1473; *Buccinum lacunosum,* Brug. *Purpura rugosa,* Lam., An. Sans Vert., Vol. VII., p. 242. *Purpura rupestris,* Valenciennes; *Purpura succincta,* var., Reeve, Conch. Icon., without figure. *Polytropa striata,* Hutton, in Jour de Conch. 1878, p. 19, and Manual of the New Zealand Mollusca, 1880, p. 56.

Hab. Point Piper, Port Jackson; Wallaroo, South Australia; Bondi Bay *(W. H. Hargraves).*

This somewhat common species is recorded by Professor Hutton from Chatham Islands, Auckland Islands, Auckland to Stewart's Island, and South Australia; my specimen was obtained twenty years ago at Wallaroo, by my kinsman Mr. R. C. Rossiter. Mr. Angas could not have found it, as there is no record of it in his Molluscan Fauna of South Australia, (Proc. Zool. Soc., 1865.)

The *Purpura textilosa*, Lam., mentioned by the Rev. J. E. Tenison-Woods in his Census of Tasmanian Shells is this species. It has not been previously recorded from Port Jackson; a specimen in the Museum in the Hargrave's Collection, is labelled Bondi Bay, Australia.

2. VOLVA DEPRESSA.

Ovulum depressum, Sowb., Jun. Pro. Zool. Soc., 1875, p. 128, pl. 24. fig. .

Hab. North-west coast of Australia *(Capt. Denicke)*. Isle Amede near Nouméa, New Caledonia *(R. C. Rossiter)*. Bampton Reef *(Brazier)*.

I have two specimens of this very rare species obtained many years ago on the Bampton Reef, found on a branch of *Madrepora*. One specimen has been recently found by Mr. R. C. Rossiter at New Caledonia. Mr. Sowerby describes it as a narrow, depressed *Ovulum*, produced in front, both ends attenuated and terminating in two points, polished, very finely striated, white, tinged with orange at the extremities; base concavely depressed; aperture narrow, rather more open towards the hinder part.

The base is slightly tinged with light yellow in my specimens. There is one specimen in the Hargrave's Collection in the Australian Museum without locality. I may mention that the French have taken possession of the Bampton Reef, Chesterfield Reef and Islands, and consider them dependencies of New Caledonia.

3. NASSA COMPACTA.

Nassa compacta, Angas, Proc. Zool. Soc., 1865, p. 154.

Hab. George's Bay, Tasmania *(Mr. Aug. Simson)*. St. Vincent's Gulf, South Australia *(Mr. Angas)*.

This species I have very often had sent to me from the amateur collectors of Tasmania, named *Nassa rufocincta*, A. Ad., the *N.*

compacta is a small thick shell and allied to *N. incrassata*, Mull., found on the English Coast.

The *Nassa rufocincta*, mentioned by the Rev. J. E. Tenison-Woods in his Census of Tasmanian Shells, Proc. Roy. Soc., Tasmania, 1877. p. 29, and found by Mr. R. M. Johnston at Pig Island, Tamar, is I believe *N. compacta*, Angas.

4. ANACHIS SPECIOSA.

Columbella (Anachis) speciosa, Angas, Proc. Zool. Soc., 1877, p. 35, pl. 5, fig. 3.

Hab. Port Jackson, New South Wales; George's Bay, Tasmania *(Mr. Aug. Simson)*.

This very pretty little species I received from Mr. Simson, it agrees in every respect with the typical form from Port Jackson.

5. FASCIOLARIA TRAPEZIUM.

Murex trapezium, Linn., Syst. Nat. ed 12, p. 1224. *Faciolaria trapezium*, Lam., Am. San. Vert. tome 7, p. 119, Tenison-Woods', Census of Tasmanian Shells, Proc. Roy. Soc., Tas., 1877, p. 30.

Hab. Amboina *(Rumphus)*. Great Indian Ocean *(Lamarck)*. Philippine Islands *(Cuming)*. Brazil (*D' Orbigny*). Port Wiseman Florida Island, Solomon Archipelago, found on the Reef under blocks of coral (*Brazier*).

This species never was found in Tasmania as quoted by the Rev. J. E. Tenison-Woods, it may have been brought to Tasmania by some of the Whale ships from the Pacific Islands, and fallen into the hands of Mr. Legrand. During the cruise of H.M.S. Curaçoa we collected a large number of specimens in a very short time. I have another instance of foreign shells being introduced into the Tasmanian Seas: Some twelve months ago Mr. Augustus Simson, L.S., sent me a large *Olive* for name; some persons living on Flinder's Island, Bass's Straits, gave it to him and distinctly